

**NASA - John F. Kennedy Space Center**

**Pollution Prevention Plan**

**Prepared by**

**KSC Environmental Program Branch**

**October 2006**

In response to the new Executive Order 13148, *Greening the Government through Leadership in Environmental Management* dated April 21, 2000, the *NASA Guidance to Implement Executive Order 13148\**, and the NASA Procedures and Guidelines, *NPG 8820.3 Pollution Prevention*, the KSC Environmental Program Branch has revised and updated this KSC Pollution Prevention Implementation Plan.

## I. KENNEDY SPACE CENTER POLLUTION PREVENTION GOALS

1. Develop and implement Environmental Management Systems by the December 31, 2005.
2. Establish and implement Environmental Compliance Audit programs.
3. Revise and update KSC Pollution Prevention Implementation Plan annually.
4. Report the Center activities under EPCRA annually.
5. Reduce the reportable KSC Toxic Release Inventory (TRI) releases and off-site transfers of toxic chemicals for treatment and disposal by 10% annually, or by 40% overall by December 31, 2006.
6. Reduce the use or waste of priority or selected chemicals by 50% by December 31, 2006.
7. Develop a plan to phase out the procurement of Class I Ozone Depleting Substances by December 31, 2010.
8. Implement environmentally sound landscape practices.
9. Comply with EO 13148 requirements and note EO 13148 recommendations.

## II. KENNEDY SPACE CENTER POLLUTION PREVENTION IMPLEMENTATION PLAN

### a. Goal 1 – Develop and implement Environmental Management System

KSC must implement an Environmental Management System (EMS) by December 31, 2005 per EO 13148. The Chief of the KSC Environmental Program Branch (EPB) and EMS group should lead the development and the implementation of EMS at KSC.

EMS is in place at KSC in February 2005. KSC employees can access information about KSC EMS at KSC Business World, <http://businessworld.ksc.nasa.gov>. Below are KSC High Priority Aspects.

HIGH PRIORITY ASPECT	OBJECTIVE	TARGET	TARGET DATE	KSC TechDoc Number
Groundwater & Soil Remediation	Reduce Agency environmental liability by closing sites or implementing final corrective remedy	Five remediation sites closed or final remedy selected	Annually	KDP-R-3277
Waste Generation, Hazardous & TRI Releases	1. Reduce disposal of hazardous waste. 2. Reduce reported TRI releases & off-site transfers for treatment & disposal	1. 10% from previous year (1998 baseline) 2. 10% annually or 40% overall (2001 baseline)	1. Annually 2. Dec. 31, 2006	KDP-R-3278
Spills	Eliminate the number of spills that are not controlled within 24-hours from discovery	Zero spill	Annually	KDP-R-3279
Natural Resources Management	Maintain and enhance the natural resources of KSC	<ul style="list-style-type: none"> <li>Meet State guidelines</li> <li>Maintain the number of acres surviving</li> <li>Do not exceed permit limitations</li> <li>Number of projects approved</li> </ul>	Annually	KDP-R-3280

		without a checklist		
Potable Water Usage & Quality	Maintain Potable Water Quality	Zero non-conformances	Annually	KDP-R-3281
Energy Usage	Reduce energy use index (BTU/sq ft)	<ul style="list-style-type: none"> <li>Standard Facilities: 30% &amp; 35% from 1985 baseline</li> <li>Energy Intensive Facilities: 20% &amp; 25% from 1990 baseline</li> </ul>	End of FY 2005 & FY 2010, respectively	KDP-R-3282
Surface Water Sediment Contamination (from Shuttle launches)	Will not address this issue until the completion of the Shuttle Program	---	---	KDP-R-3283
Air Emissions (from hypergol scrubbers)	System is functioning as designed to reduce air emissions. EMP's will not be established unless this changes	---	---	KDP-R-3284
Waste Generation, Ordnance	Compliance with all regulatory requirements	Zero violation	Annually	KDP-R-3285
Solid Waste Generation	Reduce the amount of solid waste going to landfills	Meet or exceed agency goal of 35% diversion from 1998 baseline	Dec. 31, 2010	KDP-R-3286
Air Emissions (from Shuttle launches)	There is a process in place to monitor and forecast air emission impacts	---	---	KDP-R-3287
Regulatory Compliance	Assure Compliance	Zero NOV's	Annually	KDP-R-3288

***b. Goal 2 - Establish and implement Environmental Compliance Audit programs***

KSC must conduct Center environmental compliance audits every three years. Each compliance finding should accompany by a solution to remedy the finding and the compliance audits results should address systematically through formal documentation and review procedures.

The Chief of the KSC EPB, the lead of the Environmental Permitting and Compliance group and the lead of the Environmental Management Systems group should determine the compliance audit protocol.

The Chief of the KSC EPB should present the results of compliance audits to senior management and identify actions required of senior management to address non-compliance. Corrective actions will be provided to the responsible parties for resolution.

***c. Goal 3 - Revise and update Pollution Prevention Implementation Plan annually***

KSC will revise and update the KSC Pollution Prevention Implementation Plan annually. The plan shall integrate any findings and results from any EMR's or any compliance audits. The plan also shall consider any new rules, regulations or Executive Orders.

***d. Goal 4 - Report Center activities under EPCRA annually***

KSC must report releases and transfers of toxic chemicals using the Emergency Planning and Community Right-to-Know Act (EPCRA) Section 313 Toxic Release Inventory (TRI) Form R on every July 1<sup>st</sup> of each year to the US EPA and the State of Florida State Emergency Response Commission (SERC).

KSC must comply with Sections 301 through 312 of EPCRA. KSC must have and make the material safety data sheets (MSDSs) available to all KSC employees and to local emergency planning committees (LEPC).

KSC must prepare and report the estimate amount of toxic chemicals stored at KSC through the EPCRA Tier II reporting. KSC must report the EPCRA Tier II data to the EPA, the SERC, the LEPC and the KSC Fire Department on every March 1<sup>st</sup> of each year.

KSC must prepare and report Pollution Prevention activities to the NASA HQ EMD on every October of each year. The report shall include any waste minimization activities in accordance with section 6607 of the Pollution Prevention Act.

The KSC EMS group is responsible for submitting the EPCRA Tier II report, the EPCRA TRI report and the Pollution Prevention report to the US EPA, the SERC, the LEPC, the KSC Fire Department and the NASA HQ EMD.

***e. Goal 5 - Reduce KSC Toxic Release Inventory (TRI) releases and off-site transfers of toxic chemicals for treatment and disposal by 10% annually, or by 40% percent overall by December 31, 2006***

KSC must establish the baseline of TRI releases and off-site transfers of toxic chemicals for treatment and disposal by the end of calendar year 2001.

KSC must reduce the TRI releases and off-site transfers of toxic chemicals for treatment and disposal by 10% annually or by 40% percent overall by December 31, 2006.

The KSC EMS group will coordinate source reduction and waste minimization efforts with all KSC contractors to reduce the TRI releases and off-site transfers of toxic chemicals for treatment and disposal.

***f. Goal 6 - Reduce selected hazardous waste streams by 10% annually from previous year***

KSC has identified the hazardous waste streams that are consistently generated at KSC for 10% reduction annually from previous year. The KSC EMS and KSC Permitting and Compliance groups will coordinate effort with all KSC contractors to reduce these selected hazardous waste streams.

***g. Goal 7 - Develop a plan to phase out the procurement of Class I Ozone Depleting Substances by December 31, 2010***

The KSC EMS Group, with support from the KSC Environmental Permitting and Compliance group, will coordinate effort with all KSC contractors to develop a plan to phase out the procurement of Class I Ozone Depleting Substances (ODS) by December 31, 2010.

Class I ODS Chemical Name	CAS Number	Current Applications	Procurement	Purchased Amount
CFC-11 (CCl <sub>3</sub> F) Trichlorofluoromethane	75-69-4	- Refrigerant	---	---
CFC-12 (CCl <sub>2</sub> F <sub>2</sub> ) Dichlorodifluoromethane	75-71-8	- Refrigerant - Leak Detection Calibration	Yes	180 lbs/yr
CFC-113 (C <sub>2</sub> F <sub>3</sub> Cl <sub>3</sub> ) 1,1,2- Trichlorotrifluoroethane	76-13-1	- Precision Cleaning - Leak Detection Calibration - Cryogenics Research	---	---
CFC-114 (C <sub>2</sub> F <sub>4</sub> Cl <sub>2</sub> ) Dichlorotetrafluoroethane	76-14-2	- Refrigerant - Leak Detection Calibration - Orbiter Processing	---	---

CFC-115 (C2F5Cl) Monochloropentafluoroethane	76-15-3	- Refrigerant	---	---
Halon 1211 (CF2ClBr) Bromochlorodifluoromethane	353-59-3	- Fire Protection	---	---
Halon 1301 (CF3Br) Bromotrifluoromethane	75-63-8	- Fire Protection	Yes	66 lbs/12 yrs
CFC-13 (CF3Cl) Chlorotrifluoromethane	75-72-9	- Leak Detection Calibration	Yes	1 lb/yr
Methyl Chloroform (C2H3Cl3) 1,1,1-trichloroethane	71-55-6	- Orbiter Processing	---	---

***h. Goal 8 - Implement environmentally sound landscape practices***

According to KSC Center Services Division, KSC is currently using an environmentally sound landscape practice by: a) Planting plants that are drought resistance or required minimum watering, b) Using mulches to minimize water evaporation, c) Efficient irrigation, and d) Appropriate maintenance.

***i. Goal 9 - Comply with EO 13148 requirements and note EO 13148 recommendations***

KSC shall incorporate the goals of EO 13148 into proper KSC Handbooks (KHB) and KSC Management Instructions (KMI) as required.

### **III. KSC EPCRA IMPLEMENTATION PLAN**

EPCRA intends to improve local community access to information about chemical hazards and to improve the state and local emergency response capabilities. EPCRA has three main objectives:

- To bolster local emergency planning efforts
- To improve emergency notification in the event of a release of hazardous chemicals
- To develop a baseline on routine chemical releases into the environment

To meet these objectives, EPCRA created four types of reporting obligations for facilities that store or manage specified listed chemicals. All information submitted pursuant to EPCRA regulations is publicly accessible, unless protected by a trade secret claim.

#### **A. Notification Of Extremely Hazardous Substances**

EPCRA §302 requires facilities to notify the State Emergency Response Commission (SERC) and the Local Emergency Planning Committee (LEPC) of the presence of any "extremely hazardous substance" if it has the substance in excess of the specified "threshold planning quantity". The list of such substances is in 40 CFR Part 355, Appendices A and B. It also directs the facility to appoint an emergency response coordinator.

*KSC Implementation Plan:* The KSC EPB will notify the SERC and the LEPC on all extremely hazardous substances at KSC.

#### **B. Notification During Releases**

EPCRA §304 requires facilities to notify the SERC and the LEPC in the event of a release exceeding the "reportable quantity" of a CERCLA hazardous substance or an EPCRA

extremely hazardous substance. EPCRA extremely hazardous substances and reportable quantities are listed in 40 CFR 355.

*KSC Implementation Plan:* KSC EPB keeps track of all “reportable quantity” releases and any other “non-reportable quantity” releases annually by using the Pollution Incident Report (PIR). Appendices A1, A2, A3 and A4 provide the KSC PIR System, the CY 2003 and the latest CY 2004 KSC PIR data, respectively.

## C. Emergency Planning (EPCRA Tier II)

EPCRA §311 and §312 require facilities to notify SERC, LEPC, and the local fire department of all hazardous chemicals for which the Occupational Health and Safety Administration requires material safety data sheets (MSDSs). The facility must submit either the MSDSs or a list of the substances for which MSDSs are maintained. If a list is submitted, hazardous chemical inventory forms (also known as Tier I and II forms) must also be submitted. A "Tier I" form provides information about hazardous chemicals grouped by hazard category. A "Tier II" form provides information about each specific hazardous chemical. This information helps the local government respond in the event of a spill or release of the chemical. These requirements are found at 40 CFR 370, Hazardous Chemical Reporting: Community Right-to-Know.

*KSC Implementation Plan:* On March 1<sup>st</sup> of each year, the KSC EPB will submit the EPCRA Tier II Report to the EPA, the SERC, the LEPC and the KSC Fire Department. The below tables are list of Extremely Hazardous Substances (EHS) reportable chemicals and Non-EHS reportable chemicals, respectively. Appendix B identifies the KSC EPCRA Tier II reporting process.

EHS		RY 2003		RY 2004		RY 2005	
CHEMICAL DESCRIPTION	CAS NUMBER	Max Daily Amt (lbs)	Avg Daily Amt (lbs)	Max Daily Amt (lbs)	Avg Daily Amt (lbs)	Max Daily Amt (lbs)	Avg Daily Amt (lbs)
1,1-dimethyl Hydrazine	57-14-7	18,765	18,765	18,765	18,765	18,765	9,383
Methyl Hydrazine	60-34-4	147,968	103,292	147,968	103,293	133,458	77,899
Epichlorohydrin (SRM)	106-89-8	188,557	146,300	113,134	77,696	169,701	103,371
Hydrazine	302-01-2	41,599	38,347	40,715	38,029	57,882	28,984
Diglycidyl Ether(dge)	2238-07-5	N/R	N/R	N/R	N/R	N/R	N/R
Ammonia	7664-41-7	5,693	3,544	5,692	3,546	10,701	6,449
Sulfuric acid	7664-93-9	3,119	1,814	1,537	1,262	2,909	2,713
Nitric Acid	7697-37-2	7,688	5,803	7,272	5,770	4,633	2,974
Chlorine	7782-50-5	607	607	606	606	906	606
Nitrogen Dioxide (Nitrogen Tetroxide)	10102-44-0	324,031	249,963	324,031	249,963	310,271	161,143

Non-EHS		RY 2003		RY 2004		RY 2005	
CHEMICAL DESCRIPTION	CAS NUMBER	Max Daily Amt (lbs)	Avg Daily Amt (lbs)	Max Daily Amt (lbs)	Avg Daily Amt (lbs)	Max Daily Amt (lbs)	Avg Daily Amt (lbs)
Air (Pressurized)	46	N/R	N/R	N/R	N/R	6,785.00	4,738.00
Glycerin	56-81-5	N/R	N/R	N/R	N/R	5.00	4.00

Propylene Glycol	57-55-6	N/R	N/R	N/R	N/R	912.00	912.00
Ethylenediaminetetraacetic acid (EDTA)	60-00-4	N/R	N/R	N/R	N/R	15.00	1.00
Ethyl Ether	60-29-7	N/R	N/R	N/R	N/R	6.00	6.00
Ethanol (Ethyl Alcohol)	64-17-5	N/R	N/R	N/R	N/R	4,391.74	2,651.52
Formic Acid, 96%	64-18-6	N/R	N/R	N/R	N/R	1.00	1.00
Acetic Acid Glacial 99%	64-19-7	N/R	N/R	N/R	N/R	123.84	99.81
Methanol	67-56-1	N/R	N/R	N/R	N/R	948.75	509.89
Isopropyl Alcohol (Isopropanol)	67-63-0	46,073	21,689	35,326	14,181	32,477.37	10,984.34
Acetone	67-64-1	N/R	N/R	N/R	N/R	2,688.98	1,934.91
N,N-Dimethylformamide	68-12-2	N/R	N/R	N/R	N/R	1.00	1.00
n-Butyl Alcohol	71-36-3	N/R	N/R	N/R	N/R	615.00	450.00
1,1,1-Trichloroethane	71-55-6	N/R	N/R	N/R	N/R	1,254.05	1,164.05
Trypan Blue 4% solution	72-57-1	N/R	N/R	N/R	N/R	3.00	2.00
Acetylene	74-86-2	26,477	26,133	175,840	175,556	175,723.67	175,234.44
Propane	74-98-6	38,858	29,144	40,700	30,924	37,052.89	27,169.85
Acetonitrile	75-05-8	N/R	N/R	N/R	N/R	17.00	3.00
Methylene Chloride	75-09-2	N/R	N/R	N/R	N/R	369.44	220.62
Isobutane (2-methyl propane)	75-28-5	N/R	N/R	N/R	N/R	528.22	421.66
Dichlorodifluoromethane (Freon-21)	75-43-4	24,001	24,000	24,001	24,001	24,001.00	24,001.00
Chlorodifluoromethane (Freon 22)	75-45-6	17,812	10,905	13,013	8,281	11,610.47	7,777.54
Bromotrifluoromethane (Halon 1301)	75-63-8	24,200	24,200	24,200	24,200	28,200.00	28,200.00
Trichloromonofluoromethane (CFC-11)	75-69-4	N/R	N/R	N/R	N/R	4,632.28	3,052.28
Dichlorodifluoromethane (Freon 12)	75-71-8	N/R	N/R	N/R	N/R	13,325.40	10,692.69
Trichlorotrifluoroethane (Freon 113)	76-13-1	33,141	17,539	23,213	19,541	21,088.56	18,645.43
Dichlorotetrafluoroethane (CFC-114)	76-14-2	N/R	N/R	N/R	N/R	1,350.00	1,350.00
Chloropentafluoroethane aka "Freon 115"	76-15-3	N/R	N/R	N/R	N/R	506.88	506.88
Citric Acid	77-92-9	59,377	52,969	59,178	52,636	61,133.24	53,440.24
TEOS	78-10-4	N/R	N/R	N/R	N/R	2,580.00	2,290.00
Isoprene	78-79-5	N/R	N/R	N/R	N/R	1.00	1.00
Methyl ethyl ketone	78-93-3	N/R	N/R	N/R	N/R	2,341.11	1,787.87
Dibutyl Phthalate	84-74-2	N/R	N/R	N/R	N/R	7.71	0.00
Naphthalene Petroleum Distillates	91-20-3	N/R	N/R	N/R	N/R	124.77	97.83
1-phenyl-3-pyrazolidone	92-43-3	N/R	N/R	N/R	N/R	135.20	135.15
2,4-Dichloro-Phenoxyacetic Acid	94-75-7	N/R	N/R	N/R	N/R	1.00	1.00
Benzoyl Chloride	98-88-4	N/R	N/R	N/R	N/R	1.00	1.00
Benzene, 1-(chloromethyl)-4-nitro	100-14-1	N/R	N/R	N/R	N/R	140.11	138.86
Ethyl Benzene	100-41-4	N/R	N/R	N/R	N/R	1,716.86	1,333.82
Phenylmethanol	100-51-6	N/R	N/R	N/R	N/R	487.14	440.10
Methylenebis(phenylisocyanate) MDI	101-68-8	N/R	N/R	N/R	N/R	7,291.00	6,070.00
Butane	106-97-8	N/R	N/R	N/R	N/R	454.42	402.93
Ethylene Glycol	107-21-1	N/R	N/R	N/R	N/R	6,664.01	4,965.45
Propylene Glycol Monomethyl Ether	107-98-2	N/R	N/R	N/R	N/R	1,920.00	1,770.00
Vinyl Acetate	108-05-4	N/R	N/R	N/R	N/R	143.93	90.10
Methyl isobutyl ketone	108-10-1	N/R	N/R	N/R	N/R	773.03	675.73
Propylene glycol monomethyl ether acetate	108-65-6	N/R	N/R	N/R	N/R	238.62	167.62
Toluene	108-88-3	N/R	N/R	N/R	N/R	2,672.04	2,199.70
Cyclohexanone	108-94-1	N/R	N/R	N/R	N/R	325.00	250.00
Iso-Butyl Acetate	110-19-0	N/R	N/R	N/R	N/R	200.00	180.00

Methyl n-Amyl Ketone	110-43-0	N/R	N/R	N/R	N/R	1,875.09	905.14
Hexane HPLC Grade	110-54-3	N/R	N/R	N/R	N/R	27.00	23.00
Cyclohexanone	110-82-7	N/R	N/R	N/R	N/R	189.44	186.02
Diethylene Glycol	111-46-6	N/R	N/R	N/R	N/R	280.00	250.00
2-Butoxyethanol	111-76-2	13,154	13,113	13,468	11,960	2,156.55	1,641.38
2-(2-Methoxyethoxy)-ethanol	111-77-3	N/R	N/R	N/R	N/R	133.05	68.43
2-(2-Butoxyethoxy)-ethanol	112-34-5	N/R	N/R	N/R	N/R	360.64	318.73
Catechol	120-80-9	N/R	N/R	N/R	N/R	1.00	1.00
Malathion	121-75-5	N/R	N/R	N/R	N/R	N/R	N/R
Diphenylamine	122-39-4	N/R	N/R	N/R	N/R	1.00	1.00
Hydroquinone	123-31-9	N/R	N/R	N/R	N/R	430.18	348.43
n-Butyl acetate	123-86-4	N/R	N/R	N/R	N/R	1,385.56	1,162.02
Carbon Dioxide	124-38-9	N/R	N/R	N/R	N/R	3,381.00	3,101.00
Tetrachloroethylene (Perchloroethylene)	127-18-4	N/R	N/R	N/R	N/R	1,309.08	959.05
Nitrilotriacetic Acid	139-13-9	N/R	N/R	N/R	N/R	1.00	1.00
Aminoethylpiperazine	140-31-8	N/R	N/R	N/R	N/R	108.48	107.93
Ethyl Acetate HPLC Grade	141-78-6	N/R	N/R	N/R	N/R	6.00	1.00
Heptane	142-82-5	N/R	N/R	N/R	N/R	600.05	438.66
Sodium Bicarbonate	144-55-8	N/R	N/R	N/R	N/R	1,022.85	1,022.78
1,2-Dichloroethylene	156-60-5	N/R	N/R	N/R	N/R	8,350.00	7,615.00
Bromacil	314-40-9	N/R	N/R	N/R	N/R	N/R	N/R
Diuron	330-54-1	N/R	N/R	N/R	N/R	N/R	N/R
1,1,1-Trifluoroethane	420-46-2	N/R	N/R	N/R	N/R	502.20	502.20
Calcium Carbonate	471-34-1	N/R	N/R	N/R	N/R	2,095.91	1,825.74
Uranyl acetate	541-09-3	N/R	N/R	N/R	N/R	1.00	1.00
Non-hazardous additive blend in refined oil	555-55-5	N/R	N/R	N/R	N/R	220.18	183.48
2,4-Toluene Diisocyanate	584-84-9	N/R	N/R	N/R	N/R	153.26	102.18
Carbon Monoxide	630-08-0	N/R	N/R	N/R	N/R	N/R	N/R
Ammonium Acetate	631-61-8	N/R	N/R	N/R	N/R	1.00	1.00
1,1,1,2-Tetrafluoroethane (HFC- 134a)	811-97-2	N/R	N/R	N/R	N/R	6,842.46	5,457.18
Ammonium Bicarbonate	1066-33-7	N/R	N/R	N/R	N/R	48.00	1.00
Ferric Oxide	1309-37-1	N/R	N/R	N/R	N/R	278.71	161.12
Iron oxide (SRM)	1309-37-1	33,275	25,818	19,965	13,711	26,619.82	15,187.88
Potassium Hydroxide	1310-58-3	N/R	N/R	N/R	N/R	1,308.60	937.23
Sodium Hydroxide	1310-73-2	173,936	161,092	170,954	157,764	83,542.59	77,596.82
Zinc oxide	1314-13-2	N/R	N/R	N/R	N/R	653.97	615.90
Iron Oxide	1317-61-9	N/R	N/R	N/R	N/R	1,139.20	773.31
Xylene	1330-20-7	N/R	N/R	6,654	5,361.53	5,688.23	4,731.60
Hydrogen	1333-74-0	1,206,106	704,492	983,537	778,734	982,636.76	570,513.50
Ammonium Hydroxide	1336-21-6	N/R	N/R	N/R	N/R	982.86	670.45
Sodium Silicates	1344-09-8	N/R	N/R	N/R	N/R	100.08	75.06
Tetraethylene Glycol Monobutyl Ether	1559-34-8	N/R	N/R	N/R	N/R	680.07	634.91
MTBE	1634-04-4	N/R	N/R	N/R	N/R	525.42	520.73
1,1-Dichloro-1-fluoroethane (HCFC-141b)	1717-00-6	N/R	N/R	N/R	N/R	430.00	260.00
Dimethylamine Salt of 2,4- Dichlorophenoxy Acetic Acid	2008-39-1	N/R	N/R	N/R	N/R	N/R	N/R
Diglycidyl Ether (dge)	2238-07-5	N/R	N/R	N/R	N/R	1,400.52	510.75
2-Chloro-1,1,1,2- tetrafluoroethane (HCFC-124)	2837-89-0	12,000	12,000	14,140	13,375	18,140.00	15,375.00
Ammonium Tartrate	3164-29-2	N/R	N/R	N/R	N/R	1.00	1.00
Potassium Chlorate	3811-04-9	207,360	207,360	207,360	207,360	2,561.00	2,561.00
2,4-D, isopropylamine salt	5742-17-6	N/R	N/R	N/R	N/R	N/R	N/R
Aluminum Powder (SRM)	7429-90-5	1,552,823	1,204,820	931,694	639,848	1,397,540.34	851,287.13
Magnesium Powder	7439-95-4	N/R	N/R	N/R	N/R	244.08	195.72
Mercury	7439-97-6	N/R	N/R	N/R	N/R	463.43	463.43



Argon	7440-37-1	N/R	N/R	10,850	9,697	10,490.70	9,208.19
Helium	7440-59-7	539,139	425,722	543,518	429,773	488,670.79	386,464.24
Zinc	7440-66-6	N/R	N/R	19,344	13,976	17,738.55	16,155.69
Sodium Phosphate Dibasic Anhydrous	7558-79-4	N/R	N/R	N/R	N/R	5.00	1.00
Amorphous Silica	7631-86-9	N/R	N/R	N/R	N/R	195.66	129.40
Sodium Nitrite	7632-00-0	N/R	N/R	N/R	N/R	1,109.00	264.00
Hydrochloric Acid	7647-01-0	N/R	N/R	N/R	N/R	169.11	135.69
Sodium Chloride	7647-14-5	102,400	102,400	102,410	102,410	8,110.15	4,001.15
Phosphoric acid	7664-38-2	N/R	N/R	N/R	N/R	4,245.71	3,657.66
Sodium Fluoride	7681-49-4	N/R	N/R	N/R	N/R	1.00	1.00
Sodium Hypochlorite (Bleach 10%)	7681-52-9	N/R	N/R	N/R	N/R	1,770.70	931.02
Sulfur	7704-34-9	17,738	17,738	17,738	17,738	2.00	2.00
Hydrogen Peroxide	7722-84-1	N/R	N/R	N/R	N/R	2,078.41	2,073.57
Nitrogen	7727-37-9	4,978,174	3,941,539	4,977,456	3,939,759	5,014,509.94	3,977,981.29
Barium Sulfate	7727-43-7	N/R	N/R	N/R	N/R	152.17	95.87
Calcium Sulfate Dihydrate	7778-18-9	N/R	N/R	N/R	N/R	125.93	125.93
Oxygen	7782-44-7	21,391,553	12,748,909	17,006,710	10,118,142	19,317,013.98	11,627,961.31
Ammonium perchlorate (SRM)	7790-98-9	6,876,786	5,335,632	4,126,071	2,833,613	6,189,107.22	3,769,985.86
Petroleum oil (Lubricating oils)	8002-05-9	73,234	49,731	22,912	17,205	18,549.04	12,830.34
Gasoline	8006-61-9	N/R	N/R	N/R	N/R	1,844.00	1,200.00
Kerosene	8008-20-6	659,709	659,706	659,723	659,715	374.71	9.56
Naphtha	8032-32-4	N/R	N/R	N/R	N/R	162.11	126.98
Mineral Oil	8042-47-5	N/R	N/R	N/R	N/R	617.78	505.83
Stoddard Solvent	8052-41-3	N/R	N/R	N/R	N/R	2,259.23	2,047.80
Asphalt	8052-42-4	N/R	N/R	N/R	N/R	982.99	981.80
Styrene/Butadiene Copolymer	9003-55-8	N/R	N/R	N/R	N/R	463.84	282.71
Ethoxylated Nonyl Phenol	9016-45-9	N/R	N/R	N/R	N/R	142.92	89.79
Di Iso	9016-87-9	N/R	N/R	N/R	N/R	4,430.00	3,815.00
Sodium Molybdate (VI) Dihydrate (Molybdic Acid)	10102-40-6	N/R	N/R	N/R	N/R	3.00	2.00
4-Hydroxy-4-Methyl-1-Phenyl-3-Pyrazolidone	13047-13-7	N/R	N/R	N/R	N/R	560.66	281.58
Titanium dioxide	13463-67-7	N/R	N/R	N/R	N/R	4,569.71	3,387.35
Magnesium Silicate	14807-96-6	N/R	N/R	N/R	N/R	141.83	118.29
Quartz	14808-60-7	N/R	N/R	N/R	N/R	988.00	842.93
Dimethylethoxysilan (DMES)	14857-34-2	N/R	N/R	N/R	N/R	1,320.00	1,120.00
Ammonium Ferric EDTA	21265-50-9	N/R	N/R	N/R	N/R	460.66	439.76
Aluminum Hydroxide	21645-51-2	N/R	N/R	N/R	N/R	1,112.98	615.38
Ethylene-Vinyl Acetate Polymer	24937-78-8	N/R	N/R	N/R	N/R	215.46	164.83
Epoxy Resin	25068-38-6	N/R	N/R	N/R	N/R	2,515.28	1,380.88
2-ethylhexyl ester	25153-46-2	N/R	N/R	N/R	N/R	394.74	569.32
Nonylphenol	25154-52-3	N/R	N/R	N/R	N/R	109.03	108.28
Acrylic Latex	25586-20-3	N/R	N/R	N/R	N/R	25.00	1.00
2-methyl-2-propenoic acid	25750-06-5	N/R	N/R	N/R	N/R	392.29	313.42
Ethyl Silicate Polymer	26352-16-9	N/R	N/R	N/R	N/R	222.58	181.94
Alkyl Glycidyl Ester	26761-45-5	N/R	N/R	N/R	N/R	325.26	290.57
Aliphatic polyisocyanate	28182-81-2	N/R	N/R	N/R	N/R	3,413.18	3,082.46
Paraformaldehyde	30525-89-4	N/R	N/R	N/R	N/R	3.00	2.00
Glyphosate, isopropylamine salt	38641-94-0	N/R	N/R	N/R	N/R	N/R	N/R
Heavy Solvent Naphtha	64741-65-7	N/R	N/R	N/R	N/R	232.75	194.83
Petroleum Oil, Refined	64741-88-4	N/R	N/R	N/R	N/R	1,793.72	1,342.07
Heavy Mineral Oil	64741-96-4	N/R	N/R	N/R	N/R	1,608.84	1,216.89
Petroleum Distillates, Solvent refined light naphthenic	64741-97-5	N/R	N/R	N/R	N/R	1,753.37	1,289.08
Acid Treated Heavy Naphthenic							
Petroleum Distillates	64742-18-3	N/R	N/R	N/R	N/R	164.80	139.44
Petroleum Base Oil	64742-46-7	N/R	N/R	N/R	N/R	516.27	347.83

Petroleum light distillates	64742-47-8	N/R	N/R	294,796	294,587	1,108.03	925.71
Hydrotreated Heavy Naptha	64742-48-9	N/R	N/R	N/R	N/R	1,870.43	1,296.53
Heavy Naphthenic Petroleum Oil	64742-52-5	N/R	N/R	N/R	N/R	133.34	101.46
Highly refined Naphthenic Oil	64742-53-6	N/R	N/R	N/R	N/R	134.90	113.52
Lubricating oil	64742-54-7	N/R	N/R	N/R	N/R	6,960.15	6,771.60
Paraffinic Petroleum Distillates	64742-56-9	N/R	N/R	N/R	N/R	429.46	417.26
Petroleum heavy distillates	64742-65-0	N/R	N/R	N/R	N/R	1,528.01	1,245.05
Petroleum Naphtha	64742-67-8	N/R	N/R	N/R	N/R	171.42	91.07
Mineral Spirits	64742-88-7	N/R	N/R	N/R	N/R	3,406.22	2,752.22
VM&P Naphtha	64742-89-8	N/R	N/R	N/R	N/R	380.00	350.00
Aromatic Petroleum Distillate	64742-94-5	N/R	N/R	N/R	N/R	1,305.96	1,134.45
Light Aromatic Hydrocarbons	64742-95-6	N/R	N/R	N/R	N/R	416.61	377.65
Cement	65997-15-1	N/R	N/R	N/R	N/R	922.82	729.67
Glass	65997-17-3	N/R	N/R	N/R	N/R	136.25	112.63
Amorphous Silica	67762-90-7	N/R	N/R	N/R	N/R	24.21	18.77
Amidoamine Resin	68443-08-3	N/R	N/R	N/R	N/R	393.47	371.71
Petroleum mid distillates (Diesel Fuel)	68476-34-5	1,193,489	1,146,414	2,568,900	2,502,477	2,108,693.31	1,887,062.31
Petroleum Distillates	68476-34-6	556,138	447,315	555,504	446,639	544,735.45	435,383.71
Petroleum Distillates	68476-86-8	N/R	N/R	36,150	31,310	33,250.00	28,675.00
Citrus Terpene	68647-72-3	N/R	N/R	N/R	N/R	342.99	338.12
Clay (crystalline silica)	68911-87-5	N/R	N/R	N/R	N/R	120.54	97.28
Amidoamine Resin	68991-84-4	N/R	N/R	N/R	N/R	121.03	93.83
Diesel(fuel oil #2)	77650-28-3	N/R	N/R	N/R	N/R	N/R	N/R
Imazapyr	81334-34-1	N/R	N/R	N/R	N/R	N/R	N/R
2-Propenoic Acid Polymer	89678-90-0	N/R	N/R	N/R	N/R	270.69	345.33
Silica (amorphous)	112945-52-5	N/R	N/R	N/R	N/R	568.15	445.73
	138495-42-8	N/R	N/R	N/R	N/R	8,420.00	7,480.00
HFC-43	8	N/R	N/R	N/R	N/R	1,076.00	711.00
Barium Compounds	N040	N/R	N/R	N/R	N/R	2,923.00	2,313.00
Glycol Ethers	N230	N/R	N/R	N/R	N/R	2,480.00	1,595.00
Zinc Compounds	N982	N/R	N/R	N/R	N/R		

#### D. Toxic Release Inventory (Form R)

EPCRA §313 of Title III requires manufacturing facilities included in SIC codes 20 through 39, which have ten or more employees, and which manufacture, process, or use specified chemicals in amounts greater than threshold quantities, to submit an annual toxic chemical release report to EPA. This program is called the Toxic Release Inventory (TRI). The report, commonly known as the Form R, 1) covers releases and transfers of toxic chemicals to various facilities and environmental media, 2) allows EPA to compile the national Toxic Release Inventory (TRI) database, and 3) assists in research and development of regulations, guidelines, and standards. The TRI data are used nationally to track pollution prevention progress by industry. These requirements can be found at 40 CFR 372, Toxic Chemical Release Reporting: Community Right-to-Know.

*KSC Implementation Plan:* On July 1<sup>st</sup> of each year, the KSC EPB will submit the TRI Report to the EPA and the SERC. Appendix C identifies the KSC TRI reporting process.

2005 TRI Activities Data					
CAS Number	Chemical Name	Manufacture Threshold (25,000 lbs) <i>unless it is PBT Chemical</i>	Process Threshold (25,000 lbs) <i>unless it is PBT Chemical</i>	OtherWise Use Threshold (10,000 lbs) <i>unless it is PBT Chemical</i>	Comment
7439921	Lead			2,321.37	REPORT
106898	Epichlorohydrin			37,711.00	REPORT - Form A
7429905	Aluminum			311,093.29	310,694.52 lbs (USA) - Not Fume or Dust
7440666	Zinc			53,239.69	11,225 lbs SGS and 41,160 lbs USA - Fac. Maint. Exemption
75456	Chlorodifluoromethane (HCFC-22)			52,310.21	48,044 lbs - SGS Facility Maintenance Exemption
75718	Dichlorodifluoromethane (CFC-12)			20,914.08	19,995 lbs - SGS Personal Use Exemption
78933	Methyl Ethyl Ketone (MEK)			15,224.80	Not a reportable TRI chemical
N511	Nitrates	7,599			Below MFG Threshold

2004 TRI Activities Data					
CAS Number	Chemical Name	Manufacture Threshold (25,000 lbs) <i>unless it is PBT Chemical</i>	Process Threshold (25,000 lbs) <i>unless it is PBT Chemical</i>	OtherWise Use Threshold (10,000 lbs) <i>unless it is PBT Chemical</i>	Reportable Code
60344	Methyl hydrazine			16,604.000	REPORT
76131	Freon 113			12,009.000	REPORT
7439921	Lead			4,240.773	REPORT
74862	Acetylene			653,381.000	653,361 lbs - SGS Facility Maintenance Exemption
75456	Chlorodifluoromethane (HCFC-22)			248,484.450	246,913 lbs - SGS Facility Maintenance Exemption
7440666	Zinc			69,188.255	11,054 lbs SGS and 57,890 lbs USA - Fac. Maint. Exemption
N230	Glycol Ethers			40,500.000	36,128 lbs - SGS Facility Maintenance Exemption
75718	Dichlorodifluoromethane (CFC-12)			13,315.000	9,510 lbs - SGS Personal Use Exemption
N511	Nitrates	6894			Below MFG Threshold
106898	Epichlorohydrin			0.000	No Launches; No Form A

2003 TRI Activities Data					
CAS Number	Chemical Name	Manufacture Threshold (25,000 lbs) <i>unless it is PBT Chemical</i>	Process Threshold (25,000 lbs) <i>unless it is PBT Chemical</i>	OtherWise Use Threshold (10,000 lbs) <i>unless it is PBT Chemical</i>	Reportable Code
106898	Epichlorohydrin			37,771.0	REPORT (Form A)
76131	Freon 113			16,772.0	REPORT
60344	Methyl hydrazine			10,950.0	REPORT
7439921	Lead			3,535.2	REPORT
7429905	Aluminum			310,633.8	EXEMPT (310,564 lbs); BELOW O/U Threshold
74862	Acetylene			279,769.0	EXEMPT - Facility Maintenance
75456	Chlorodifluoromethane (HCFC-22)			243,492.4	EXEMPT - Facility Maintenance (242,623 lbs); BELOW O/U Threshold
7440666	Zinc			49,324.0	EXEMPT - Facility Maintenance (48,790 lbs); BELOW O/U Threshold
75718	Dichlorodifluoromethane (CFC-12)			11,218.0	EXEMPT - Personal Use (7,495 lbs); BELOW O/U Threshold (3,723 lbs)

**Fiscal Year 2005  
KSC Hazardous Waste Report  
Top Fifteen Wastestreams**

Process Code	Waste Description	Est. Offsite Disposal Cost (\$)	Amount (kg)	Amount (lbs)
1 HB0013/HX0005	Oxidizer Scrubber Liquor	\$5,643.87	26,788	58,933.6
2 HK0012,17,27	Debris with Toxic Paint Residues	\$55,139.21	16,720	36,784.0
3 HC0004	Chromate Solutions	\$2,085.00	15,407	33,895.4
4 HK0004	TC Organic Solids/Debris	\$44,220.79	10,980	24,156.0
5 Various	Waste Chemical Products	\$39,639.86	7,989	17,575.8
6 HD0008	Blasting waste with metals	\$3,555.09	7,526	16,557.2
7 HJ0055/HJ0056	Spent Paint Solvents	\$3,366.96	6,967	15,327.4
8 HB0005	Alkali from Metal Cleaning	\$1,315.87	4,047	8,903.4
9 HX0006	Neutralized Oxidizer Rinsewater	\$7,323.20	2,949	6,487.8
10 HC0005	Neutralized Chromic Acid Debris	\$3,135.60	2,680	5,896.0
11 HF0037	Fuel Vapor Scrubber Liquor, Haz Waste Processing	\$0.00	2,474	5,442.8
12 HJ0013	Flammable Solvent Sample Residuals, PG III	\$863.65	2,416	5,315.2
13 HJ0004	Isopropanol	\$1,161.75	2,057	4,525.4
14 HA0018	Mixed Acid	\$1,970.42	1,940	4,268.0
15 HJ0201	Wastewater contaminated with F005 solvent	\$2,191.81	1,925	4,235.0
16 Other/Misc		\$80,908.81	14,573	32,060.6
<b>Total</b>		<b>\$252,521.89</b>	<b>127,438</b>	<b>280,363.6</b>

### III. KSC AFFIRMATIVE PROCUREMENT and RECYCLING

Section 6002 of the Resources Conversation and Recovery Act (RCRA) and Executive Order 13101: *Greening the Government through Waste Prevention, Recycling, and Federal Acquisition* direct federal agencies to purchase recycled content products whenever possible. In response to the RCRA and the Executive Order, U.S. Environmental Protection Agency developed the Comprehensive Procurement Guideline (CPG). The CPG designates recycled products in seven product categories for which federal procuring agencies need to develop their affirmative procurement programs. The eight product categories are: 1) Paper and paper products, 2) Vehicular products, 3) Construction products, 4) Landscaping products, 5) Transportation products, 6) Park and recreation products, 7) Non-paper products, and 8) Miscellaneous.

The Chief of KSC EPB is responsible for establishing Affirmative Procurement and Recycling Program and the appointment of an Affirmative Procurement and Recycling Program Manager to initiate and coordinate the Affirmative Procurement and Recycling Program across all KSC organizations.

#### KSC RAP - CPG Items For CY 2005

	Total Quantity Purchased	Quantity Purchased with Recovered Material Content	Units	Total Amount Purchased	Amount Purchased Containing Recovered Materials
<b>Kennedy Space Center</b>	<b>5,648,504</b>	<b>5,648,504</b>		<b>\$334,473</b>	<b>\$334,473</b>
Paper and Paper Products	5,648,504	5,648,504	n/a	\$334,473	\$334,473
<b>KSC Base Operations</b>	<b>77,924</b>	<b>47,361</b>		<b>\$1,584,758</b>	<b>\$1,177,352</b>
Binders (chipboard and plastic covered, not cloth)	8,169	1,625	n/a	\$37,456	\$4,973
Building Insulation Products	5	5	n/a	\$172	\$172
Carpet (low and medium wear polyester fiber only)	1,817	1,817	n/a	\$207,077	\$207,077
Cement	1,042	843	cubic yds	\$5,182	\$3,399
Commercial Sanitary Tissue Products	4,149	4,149	each	\$106,243	\$106,243
Concrete	2,919	1,999	cubic yds	\$306,495	\$209,895
Engine Coolants	183	0	gals	\$1,523	\$0
Industrial Drums	1,099	1,099	n/a	\$43,131	\$43,131
Latex Paints	0	0	n/a	\$0	\$0
Motor Vehicle Tires	0	0	units	\$0	\$0
Office Furniture	131	0	each	\$61,559	\$0
Office R/ W Containers (plastic, paper or steel)	108	2	n/a	\$793	\$111
Pallet	40	0	each	\$420	\$0
Paper and Paper Products	51,528	32,201	n/a	\$577,488	\$455,269
Plastic Clipboards	21	14	each	\$85	\$59
Plastic Desktop Accessories	898	335	n/a	\$10,040	\$3,313
Plastic File Folders	71	0	each	\$557	\$0
Plastic Trash Bags	1,343	1,230	n/a	\$27,403	\$25,145
Re-Refined Oil	2,533	693	gals	\$22,676	\$1,738
Sorbents (Adsorbents and Absorbents)	153	83	n/a	\$4,205	\$1,064

Toner Cartridges	1,685	1,236	each	\$169,588	\$113,098
Traffic Cone	30	30	each	\$2,665	\$2,665
<b>KSC Payloads/Station Program</b>	<b>25</b>	<b>0</b>		<b>\$322,602</b>	<b>\$280,765</b>
Carpet (low and medium wear polyester fiber only)	0	0	n/a	\$4,300	\$4,300
Industrial Drums	0	0	n/a	\$9,908	\$8,879
Motor Vehicle Tires	25	0	units	\$4,111	\$0
Paper and Paper Products	0	0	n/a	\$192,144	\$166,218
Plastic File Folders	0	0	each	\$22,483	\$22,483
Plastic Trash Bags	0	0	n/a	\$13,422	\$12,413
Re-Refined Oil	0	0	gals	\$4,733	\$3,727
Toner Cartridges	0	0	each	\$71,502	\$62,745
<b>KSC Shuttle Program</b>	<b>63,743</b>	<b>48,391</b>		<b>\$908,438</b>	<b>\$497,869</b>
Binders (chipboard and plastic covered, not cloth)	0	0	n/a	\$3,805	\$3,762
Commercial Sanitary Tissue Products	27,000	27,000	each	\$477	\$477
Concrete	7	7	cubic yds	\$940	\$940
Engine Coolants	318	0	gals	\$2,874	\$0
Industrial Drums	1,909	1,909	n/a	\$51,583	\$51,583
Latex Paints	196	196	n/a	\$3,055	\$3,055
Motor Vehicle Tires	1	0	units	\$605	\$0
Pallet	3,528	0	each	\$57,682	\$0
Paper and Paper Products	0	0	n/a	\$362,032	\$309,960
Plastic Desktop Accessories	0	0	n/a	\$421	\$210
Plastic Trash Bags	15,000	15,000	n/a	\$3,476	\$3,476
Re-Refined Oil	4,109	0	gals	\$41,190	\$0
Sorbents (Adsorbents and Absorbents)	7,980	1,920	n/a	\$9,481	\$5,360
Strapping	60	60	n/a	\$1,104	\$1,104
Toner Cartridges	3,635	2,299	each	\$369,712	\$117,942
Traffic Barricades	0	0	each	\$0	\$0
<b>KSC Visitor Center</b>	<b>27,899</b>	<b>8,495</b>		<b>\$513,961</b>	<b>\$216,798</b>
Binders (chipboard and plastic covered, not cloth)	0	110	n/a	\$0	\$801
Commercial Sanitary Tissue Products	1,635	1,541	each	\$74,567	\$72,685
Concrete	2,100	0	cubic yds	\$0	\$0
Floor Tiles (rubber or plastic only)	18,810	0	n/a	\$0	\$0
Motor Vehicle Tires	242	82	units	\$51,437	\$13,427
Office Furniture	0	43	each	\$0	\$13,016
Office R/ W Containers (plastic, paper or steel)	0	31	n/a	\$0	\$1,309
Paper and Paper Products	0	2,224	n/a	\$132,468	\$55,600
Park Benches and Picnic Tables	25	25	each	\$16,250	\$16,250
Plastic Clipboards	71	71	each	\$0	\$314
Plastic Desktop Accessories	0	129	n/a	\$0	\$2,337
Plastic File Folders	0	3,200	each	\$0	\$0
Plastic Trash Bags	984	984	n/a	\$13,007	\$13,007
Signage	15	15	each	\$25,378	\$25,378
Sorbents (Adsorbents and Absorbents)	800	0	n/a	\$112	\$0
Toner Cartridges	3,157	40	each	\$200,142	\$2,674
Traffic Cone	60	0	each	\$600	\$0

### KSC RAP - Recycled Items For CY 2005

Site/Material	Quantity	Units	Revenue
<b>Kennedy Space Center</b>	<b>27,799,093</b>	<b>lbs</b>	<b>\$332,273</b>
Aluminum	46,400	lbs	\$26,083
Batteries, All Types	10,000	lbs	\$1,711
Blast Media	4,346,420	lbs	\$0
C&D projects	2,660,460	lbs	\$0
Cardboard	45,340	lbs	\$93
Cement and Concrete	11,242,920	lbs	\$0
Copper	206,500	lbs	\$133,333
Electronics (scrap property material content only)	353,950	lbs	\$70,790
Lumber	808,840	lbs	\$0
Mixed Paper	723,518	lbs	\$12,454
Printer	165,647	lbs	\$15,062
Scrap Metal	2,013,533	lbs	\$65,229
Stainless Steel	13,000	lbs	\$7,172
Toner Cartridges (1.5 lbs per)	3,000	units	\$0
Trailer	165,000	lbs	\$345
Yardwaste	12,969	cubic yds	\$0
<b>KSC Base Operations</b>	<b>98,047,305</b>	<b>lbs</b>	<b>\$0</b>
Aluminum	5,000	lbs	\$0
Antifreeze	5,607	gals	\$0
Batteries, All Types	1,743	lbs	\$0
Blast Media	71,213	lbs	\$0
Fluorescent Lamps (1.25 lbs. per)	5,929	units	\$0
Oil Filters	10,185	lbs	\$0
Oily Rags	5,100	lbs	\$0
Photo Fixer	772	gals	\$0
Tires (25 lbs. per)	270	units	\$0
Used Oil	31,149	gals	\$0
White Paper	228,300	lbs	\$0
Yardwaste	253,000	cubic yds	\$0
<b>KSC Life Science</b>	<b>539</b>	<b>lbs</b>	<b>\$0</b>
Cardboard	0	lbs	\$0
Fluorescent Lamps (1.25 lbs. per)	390	units	\$0
Mixed Paper	0	lbs	\$0
Toner Cartridges (1.5 lbs per)	34	units	\$0
<b>KSC Payloads/Station Program</b>	<b>1,812</b>	<b>lbs</b>	<b>\$158</b>
Lead	500	lbs	\$158
Refrigerant	1,287	lbs	\$0
Solvents	25	lbs	\$0
Aluminum	250	lbs	\$0
Antifreeze	234	gals	\$0
Batteries, All Types	30	lbs	\$0
Cardboard	137,341	lbs	\$0
Cooking Oil/Grease	9,235	lbs	\$0
Fluorescent Lamps (1.25 lbs. per)	1,601	units	\$0
Mixed Paper	4,034	lbs	\$0
Oil Filters	1,072	lbs	\$0
Oily Rags	16,640	lbs	\$0
Plastic	420	lbs	\$0
Tires (25 lbs. per)	242	units	\$0
Toner Cartridges (1.5 lbs per)	3,000	units	\$0
Used Oil	2,600	gals	\$0

#### **IV. KSC ALTERNATIVE FUELED VEHICLES**

Executive Order 13149: *Greening the Government through Federal Fleet and Transportation Efficiency* requires Federal agencies to reduce its entire vehicle fleet's annual petroleum consumption by at least 20% by the end of FY 2005, compared with FY 1999 petroleum consumption levels. The EO also requires Federal agencies to use the alternative fuels to meet a majority of the fuel requirements of those motor vehicles by the end of FY 2005.

The KSC Supply, Equipment, Transportation and Center Support Branch are responsible to implement the EO 13149 at KSC. The KSC EMS Group will assist the KSC Transportation Group in promoting the use of Alternative Fueled Vehicles (AFV) at KSC.

#### **V. KSC OZONE-DEPLETING SUBSTANCES**

Executive Order 12843: *Procurement Requirements and Policies for Federal Agencies for Ozone-Depleting Substances* directs Federal agencies to minimize the procurement of products containing ODS's. The E.O. also requires Federal agencies to implement policies that will reduce emissions of ODS's, promote recycling of ODS's, and cease the procurement of nonessential products containing or manufactured with ODS's.

The KSC Environmental Permitting and Compliance group and the KSC EMS group are currently monitoring the usage of ODS at KSC. The KSC Procurement Office is responsible for the procurement requirements for the purchase of ODS.

#### **VI. KSC PROCUREMENT OF ENERGY EFFICIENT COMPUTERS**

Executive Order 12845 directs NASA to ensure that all computer equipment purchased meets EPA "Energy Star" requirements for energy efficiency. Case-by-case exemptions are allowed, taking into account commercial availability, significant cost differentials, NASA's mission, and NASA's performance requirements. NASA is also directed to educate its computer users concerning the economic and environmental benefits derived from using this energy efficient, low-power standby feature. The KSC Information Technology group and the KSC Procurement Office are currently purchase the EPA "Energy Star" computer equipment.

#### **VII. GUIDANCE for KSC POLLUTION PREVENTION - WASTE MINIMIZATION**

KSC must reduce the volume and toxicity of hazardous wastes to the extent economically practicable. All personnel will adopt this practice in day-to-day operations and are encouraged to introduce new ideas concerning waste minimization opportunities to management. This section provides guidance for waste minimization as required by section 3002(b) of the Resource Conservation and Recovery Act (RCRA) as amended by the Hazardous and Solid Waste Amendments of 1984 and section 6602(b) of the Pollution Prevention Act.

##### **A. Waste Minimization Elements:**

1. **Top Management Support:** Top management for each waste generating organization can show support of waste minimization efforts by using these techniques:



- Incorporate waste minimization as an integral part of organizational strategies to increase productivity and quality.
  - Set Center-wide goals for the reduction of both volume and toxicity of waste streams consistent with those established by the KSC Environmental Program Branch.
  - Commit to implementing recommendations identified through assessments, evaluations, and waste minimization teams.
  - Designate a waste minimization coordinator who is responsible for facilitating effective implementation, monitoring, and evaluation of the program.
  - Publicize waste minimization success stories and recognize individual and group waste minimization accomplishments.
  - Raise employee awareness of the waste generating impact that results from daily operations and work procedures.
2. **Characterization of Waste Generation and Waste Management Costs:** The Waste Management Authority (WMA) tracks types and Amts of waste generated at KSC and the direct costs associated with waste disposal. True costs of waste management include additional costs of regulatory compliance oversight, reporting requirements, cost of labor and materials, employee exposure and health care, liability insurance, and possible corrective action costs. These costs also affect the economic practicability of waste minimization activities.
  3. **Periodic Waste Minimization Assessments:** Each waste generating organization should perform process or facility assessments to identify opportunities at all points in a process where materials can be prevented from becoming a waste. These waste minimization opportunities should be analyzed based on true costs associated with management of the waste.
  4. **Encourage Technology Transfer:** Many useful and valid waste minimization techniques can be shared within waste generating organizations and among other waste generating organizations. Functions at KSC, such as the KSC Environmental Working Group and KSC Pollution Prevention Working Group provide a forum for sharing these technologies and techniques.
  5. **Program Implementation and Evaluation:** Recommendations developed through process assessments, evaluations, and waste minimization teams should be scheduled and tracked through implementation. All KSC waste generating organizations should monitor the overall effectiveness of waste minimization activities in relation to waste minimization goals. The WMA will help these efforts through distribution of periodic reports on the Amt of hazardous waste generated and the associated direct disposal costs.

**B. Management Options (in order of preference):**

1. **Prevention Through Source Reduction:** Source reduction is the practice of reducing the Amt of hazardous substances, pollutants, or contaminants entering any waste stream or otherwise released into the environment before recycling, treatment, or disposal. Source reduction reduces or eliminates the hazards to employees, the public, and the environment along with the liability of regulatory compliance. Several source reduction techniques are listed below.
  - **Initial Environmental Design:** Incorporation of environmental considerations into the initial process or facility design to limit or prevent pollution or waste generation from occurring.
  - **Process Efficiency Improvement:** Changes to a process or facility to reduce requirements for hazardous substances, pollutants, or contaminants.
  - **Material Substitution:** Substitution of non-hazardous or less hazardous materials into a process to reduce the toxicity of the resulting waste stream.

- **Inventory Control:** Control of hazardous materials in inventories to promote efficient use and to avoid shelf-life expiration and waste generation. Emphasize issuing only the quantity of a material needed for the job.
  - **Preventive Maintenance:** Designing equipment for maintainability can result in detection and avoidance of equipment problems before failures and associated spills and leaks of hazardous materials occur.
  - **Improved Housekeeping:** A clean, well-organized facility and awareness by personnel regarding the proper management and use of toxic and hazardous materials can greatly reduce the Amt of accidental spills, releases, and subsequent waste generation.
2. **Recycling:** Recycling is the most preferred method of waste minimization for those hazardous substances, pollutants, or contaminants that cannot be reduced at the source. Recycling is the practice of using, reusing, or reclaiming a waste material. A waste material is used or reused if it is employed as an ingredient in an industrial process to make a product or employed in a particular function or application as an effective substitute for a commercial product. A waste material is reclaimed if it is processed to recover a usable product or regenerated.
  3. **Treatment:** Treatment options should only be employed when wastes cannot be prevented or recycled. Treatment is any method that physically, chemically, or biologically changes the character or composition of the waste; recovers energy or material resources from the waste; renders the waste non-hazardous or less hazardous; reduces the volume of the waste; renders the waste safer for transport, storage, or disposal; or makes the waste amenable for recovery or storage. Treatment opportunities for hazardous wastes at KSC may be referenced in Technical Response Package instructions (example: neutralization of corrosive wastes).
  4. **Disposal:** Disposal is the discharge, deposit, injection, dumping, spilling, leaking, or placing of a waste into or on land or water or into the air so that hazardous constituents may enter the environment. No hazardous wastes may be disposed at KSC, except certain treated wastes that are amenable for disposal in the sewage treatment works and are approved by the Sewage Treatment Plant operator. Disposal must only be used when the waste could not be prevented or recycled.

# **VIII. KSC POLLUTION PREVENTION PROJECTS and ACTIVITIES for 2005**

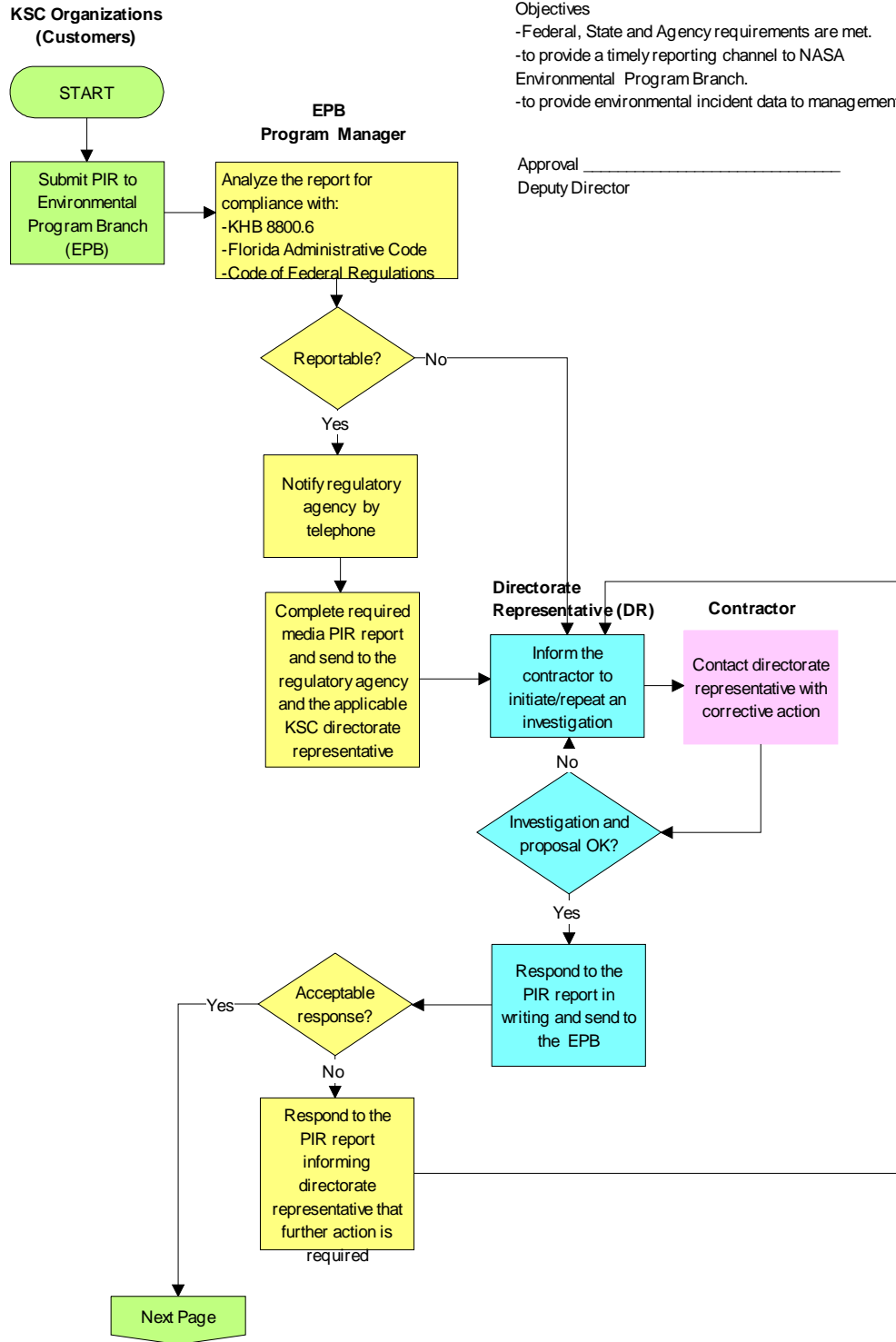
<b>Site Name</b>	<b>Project Name</b>	<b>Project Description</b>	<b>Project Location</b>	<b>Current Process Description</b>	<b>Cause Description</b>	<b>Primary Cause</b>
Kennedy Space Center	DARCY - Waste Concrete Diversion Project	Diverted 11,242,920 lbs of waste concrete from demolition buildings in 2005	KSC DARCY	Dispose at KSC Class III Landfill	To meet or exceed 35% Solid Waste Diversion Goal	P2/Recycling
Visitor Complex	Electric carts	Purchased 13 electric powered zero emission low speed vehicles.	Visitor Complex	All low speed vehicles such as golf carts were gasoline powered.	Reduce air emissions by several tons per year per vehicle. Total reductions - Nitrous oxides 504 lbs. Carbon monoxide - 10.1 tons Carbon dioxide - 24.8 tons	General P2
Visitor Complex	Environmentally friendly cleaning products	Bio-based products are used.	Custodial	Petroleum-based polishes were eliminated.		Health and Safety Improvement
Visitor Complex	Launder wipes	Reusable wipes are used and laundered.	Custodial and exhibits	Disposable wipes were used for cleaning by custodial and exhibits maintenance.	Discarded wipes contained regulated materials such as solvents.	Non-compliance (without NOV)
Visitor Complex	Secondary containment for used cooking oil	Tanks were replaced with a 4-drum system with secondary containment.	Orbit cafeteria and Apollo Saturn V	Cooking oil was previously collected in single-walled tanks without secondary containment.	Any spills will be collected in secondary containment.	General P2

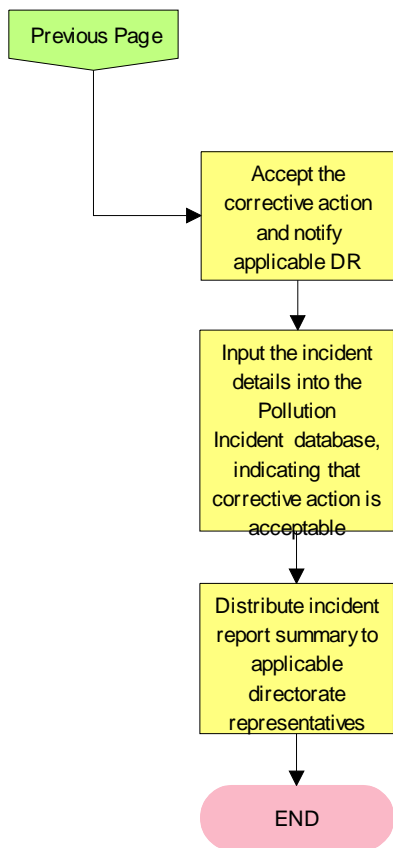
## **APPENDIX**

- A. KSC Pollution Incident Report
  - 1. KSC PIR System
  - 2. May 2005 to October 2006
- B. KSC EPCRA Tier II Reporting Process
- C. KSC Toxic Releasing Inventory (TRI) Reporting Process

## APPENDIX A1 – KSC Pollution Incident Report System

KDP-KSC-P-1728  
Rev. B





## Appendix A2 – May 2005 to October 2006 KSC Pollution Incident Report

Incident Date	Material	Amount	Location	Incident Report	Incident Causes	Action Taken
5-May-05	Refrigerant oil and R-22 Freon	<2 gallons oil, ~20 lbs of R-22 Freon	M7-1354 PHSF - HVAC chiller on SE corner of building	A Jacobs-Sverdrup Technician went to the facility to do a routine maintenance on the chiller system. On arrival he noted that the system had leaked oil onto the pad and notified the Facility Manager who contacted Boeing SHEA and Security. Exact time release occurred and total length of release is unknown although stains appear relatively fresh. Total oil capacity for each circuit is 8 gallons, only 1 circuit involved.	System over pressurized releasing oil and Freon - mechanical failure is suspected and is being investigated. Facility anomaly is being investigated for corrective action and prevention of re-occurrence.	Non-emergency 911 was called, SGS Spill Response/Cleanup responded. Boeing Haz Waste Techs applied dikes pads & oil dry to affected areas and cleaned up. Soil areas affected were also removed, drummed by SGS, and turned over to Boeing for disposal.
9-May-05	Gear Oil	0.5 gal	Pad A surface, east side of crawler path	Gear oil spilled from breather vent when a hammerhead crane gearbox was being lowered.	Operator error.	Spill kit materials deployed and spill cleaned up. Waste filled less than a 5 gallon can. Waste was sent to Mod Management for disposal.
24-May-05	Ethyl Silicate/MPN 39-6099-90530/Spec MBO115-034 TY1	8 fluid ounces	SLF/ Columbia Hangar, Bldg J6-2466	Leak was discovered at the bottom of a containment bottle.	Unknown	Called 911, checked all containers in K6-1547 POL to ensure no further leaks in other containers.
24-May-05	Decalcifying Solution (HCl)	approximately 20cc	SLS Lab 133 laboratory sink	Decalcifying solution was poured down the drain. A FSRI Student then turned on the tap water and a gas emitted from the drain.	Pouring decalcifying solution down a drain	Sink is roped off and no longer in use pending further investigation
26-May-05	Diesel Fuel	1 gal	Utility Annex K7-947 Diesel Fuel Tank Farm in secondary containment	While loading fuel from a JBOSC operated tanker the facility side line leaked a small amount of fuel inside the secondary containment area.	Failure of a flow meter caused a back -up type leak at facility side hose connection.	Facility workers absorbed the small spill with pads immediately
27-May-05	Fuel Scrubber Liquor (citric acid with low levels N2H4) Waste Process Code NF0001	1 gallon	Wiltech Facility K6-1748A Waste storage facility in back of the main building.	The top of a 15 gallon poly type drum tore open under the strain of a worker lifting (by Handle), from a drum containment pallet to the floor of the building. A nearby worker was splashed by the spilling acid and received medical evaluation for a chemical exposure.	Drum failure!	SGS Hazardous Waste Technicians with the help of Wiltech facility worker cleaned up and re-containerized the contents of the damaged container.

3-Jun-05	3878 LF NC Soap, Detergent TRS #09081	75 gallons	Turco tank # T-113, ARF	Tank overflow with release to domestic sewer.	Valve left open causing DI water to overflow tank.	Spill was cleaned up by squeegee into drain and remainder was mopped and poured into drain.
8-Jun-05	Hydraulic Oil	1 gal	M6-486 POL storage area... secondary containment!	While loading new hydraulic oil into a JBOSC operated tank the facility experienced a small leak inside the secondary containment area.	Overfill!	JBOSC Post Emergency Spill Cleanup Team absorbed the spill with clay media.
13-Jun-05	Hydraulic Oil	.25 gal	LCC SW Parking lot	A JBOSC operated tractor experienced a hydraulic oil leak onto the grass.	Equipment damage!	Initial response provided by Yang Operator in the form of absorbent media. Follow on response on 6/16/05 by JBOSC PESCT where the contaminated area was excavated with shovels. Waste removed to be disposed of properly.
15-Jun-05	R-22 Freon (CHLORODIFLUOROMETHANE)	~180 lbs of R-22 Freon	M7-1354 PHSF - HVAC south chiller on SE corner of building	A terminal o-ring failed and blew out, emptying the south chiller compressor of R-22 refrigerant.	Mechanical failure is suspected and is being corrected.	None needed
15-Jun-05	Hydraulic oil.	10 gallons	H4-1797 Fish and Wildlife Maintenance Facility.	During an SGS monitored roofing contract a vendor operated lift truck experienced a hydraulic failure and spilled (sprayed) about ten gallons oil on the cement, grass and sand parking lot.	Equipment failure!	The JBOSC Post Emergency Spill Cleanup Team responded and facilitated (by excavation) complete removal of the contaminated soil.
22-Jun-05	Engine Oil	Approximately 0.1 gallon	OPF 1	The driver called 911 and reported smoke coming from the engine on her truck, the fire department responded and found the oil leak dripping on the engine manifold, approximately 0.1gallon of oil fell on the ground which was subsequently cleaned up by SGS environmental.	Gasket or seal leak on a USA Government truck.	Driver provided pan and pads for containment followed by SGS spill team. The truck was towed away for repair.
23-Jun-05	AW-68 Hydraulic Fluid	Approximately 8 oz	VAB, south lot in VLD work area.	Quick disconnect fitting on Mammoet transporter leaked, spilling approximately 8 oz of hydraulic fluid on asphalt.	Failure of fitting.	Fitting was capped off and cleaned. Spill was cleaned up with oil dry.
27-Jun-05	Hydraulic oil	0.03	Grass @ South side of SSPF MM7-360	A JBOSC operated lawn tractor experienced a small hydraulic oil leak.	Equipment failure!	Tractor operator placed a pad under the drip.



27-Jun-05	Sulfuric Acid (CAS 7664-93-9, MSDS 11959)	1 Quart	Hangar AF	Employee was transporting a pallet of material on a forklift and a quart bottle rolled off and was run over by the forklift.	Human error.	Called safety and 911. Spill team responded and cleaned up the spill. The employee was suspended for using bad judgment in transporting material with a forklift, if that counts as a corrective action.
30-Jun-05	compressor oil	maximum 14 gallons	M7-1354 PHSF Boiler room (PHSB 06	Facility compressor failed emptying entire 14 gallon pressurized oil reservoir onto interior room floor. Some quantity (up to several gallons) may have entered floor drain to industrial sewer. No material was lost to the exterior of the room.	Mechanical failure of compressor oil piping	Absorbent mats and oil dry were used to form a berm around the floor drain. Spilled oil on floor was absorbed with PIG mats.
30-Jun-05	Diesel fuel	0.5 gal	KSC Industrial Area, at the corner of "C" and "5th" Avenue's on "5th" east of "C".	GSA Vehicle fuel line apparently developed a leak while in transit.	Suspected fuel line failure	911 called, SGS spill team responded and cleaned up material.
15-Jul-05	Gasoline and Ethylene Glycol	1 gallon	Integrated Logistics (K6-1547) parking lot, west side.	A USA employee POV developed a leak from road FOD. As the employee got out of her vehicle she smelled the gasoline and called 911. The JBOSC spill team then arrived to contain and clean up the spill.	FOD on a public highway.	A pan was used to contain the leak until it could be plugged. The spill was cleaned with absorbent clay and bulked with like material. Approximately 5 gallons of waste was generated.
19-Jul-05	Diesel Fuel	8 oz.	M6-486 Cement Fueling Pad South side of Building.	An apparent fueling burp caused a few ounces of diesel fuel to puddle on the cement pad.	Fueling incident.	Logistic operator discovered the small spot of fuel and applied absorbent clay. Clay was than swept up and disposed of properly.
20-Jul-05	Shell Omala 68 oil.	<1 4oz inshore, <2 quarts total at sea	M/V Liberty Star	Oil leak was discovered at the port bow thruster on the Liberty Star due to reservoir oil being about 2 quarts low. Small sheen was visible on the water surface. Divers were dispatched to check for damage. Cause was found to be a leak in the seal around the impeller shaft.	Shaft seal leak.	Absorbent pads were packs around the shaft, the thruster was taken out of service and the ship is being sailed to South Carolina for repairs. Pads stopped leak and sheen dissipated.

22-Jul-05	Automotive engine coolant (POV antifreeze)	< 1 gallon	O&C (M7-355) west parking lot	A NASA employee's POV was noticed to be leaking antifreeze to the parking lot. The Boeing Facility Manager called 911 for a non-emergency spill and Boeing SHEA notified NASA EPB. Fire Services responded, but deferred to Spill Response Team. The owner was notified and the POV is scheduled to be towed off-site for repair.	Mechanical failure, cause unknown.	911 were called, SGS Fire Services responded. SGS Spill Response Cleanup will clean up material for disposal.
27-Jul-05	Oil	< 1 gallon	VAB - Middle of Transfer Aisle near north door.	A puddle of oil (approx. 2 ft diameter) was found on the floor of the transfer aisle. Source of oil is unknown.	Unknown.	USA Heavy Equipment used absorbent to soak up the oil for proper disposal. This was a voluntary effort as there was no known source of the oil.
28-Jul-05	Gasoline	Approximately 1.5 gallons	MOB parking lot at ARF	An employee came to the Security Control Center and advised that a Toyota parked in front of the MOB was leaking gasoline. Fire and Rescue were contacted and responded to the MOB area. Pages were made to locate the owner of the vehicle. The owner responded to the area and stated he heard something hit the bottom of his vehicle on his way into work this morning. Fire & Rescue advised him that there was a hole in the gas tank and there was also damage to the brake line. The vehicle was towed off at about 9:00	FOD on a public roadway.	Fire and Rescue put kitty litter on the gasoline that had leaked onto the pavement and plugged the hole in the gas tank. SGS Environmental cleaned up the kitty litter.
29-Jul-05	Battery Acid CAS 7664-93-9	1 Gallon	UPS Battery Bank #1, Cell #3 in the LCC Battery Vault.	Battery case split releasing electrolyte.	Unknown.	Neutralizing powder and absorbent pigs were used to contain and clean up the spill.
1-Aug-05	Potable Water	100 gallons (20gal/day)	Immediately behind ARF Chiller Building shop near cooling towers.	An underground potable water line failed and leaked to grade. This line is a branch off of the potable water loop.	Line failure.	Leak was isolated from the rest of the potable water loop at the ARF. Water service to all buildings was not interrupted.

2-Aug-05	Potable Water	1000 Gallons	MLP-1, inside VAB High Bay 3	Mechanics were installing flanges in the drain line for the Sound Suppression Deck Quench System in MLP-1 Compartment 41B. The flanges were being installed between the deck quench piping and the industrial waste drain to prevent the deck quench piping from draining down after they are filled for launch countdown. With the piping open for the installation of the mod, the water spilled into 41B instead of exiting through the drain piping.	Human error.	Employees completed the installation of the piping and stopped the leak.
11-Aug-05	Hydraulic Oil	3 gallons	Parking lot on north side of VAB	Hydraulic line to the left our rigger on a rental crane for the VAB doors job failed.	Line failure	Oil dry was used to contain and clean the asphalt. Oil dry was placed into cans for waste stream.
22-Aug-05	Oily waste water Process Code UR0006	2 gallons	K6-0947D Utility Annex Outside Condensate tank located on west side of the bldg.	Condensate tank overflowed into the secondary containment where a drain valve was left open allowing two gallons to flow out onto the pavement and surrounding hard-pan type parking area.	Operator Error!	Initial response provided by utility annex operators in the form of absorbent pads.
23-Aug-05	Compressor Oil (CAS No. 122-39-4)	~3 gallons	SE corner of VAB	Safety valve failure on a compressor used by a USA subcontractor.	Mechanical failure.	Oil dry was used by workers to contain/clean the spill. Wipers were used to clean the compressor.
23-Aug-05	Hydraulic Oil	2 gallons	Nearest Facility K6-1247 spill footprint located on east side of utility road.	A JBOSC operated grade-all type tractor experienced a hydraulic line leak causing approximately 2 gallons of oil to spill on grass on the east side of the road.	Equipment failure!	The JBOSC Post Emergency Spill Cleanup Team responded and excavated two 55 gallon drums of soil.
30-Aug-05	Gasoline	0.5 gallon	K6-0569 parking lot.	Small "pinhole" leak developed on fuel line to a gasoline engine. Small "pinhole" leak developed on fuel line to a gasoline engine in an Upright Tiger Lift, HE 907-437.	Dry rot in fuel line.	Oil dry was used to contain/clean up spill, fuel line has been replaced.
30-Aug-05	BATTERY ACID	UNKNOW- POSSIBLY SEVERAL GALLONS	M7-798 Heavy Equipment lot - North west corner	Several pallets of lead acid batteries had been staged for transport to Ransom Road for recycling. Transportation Techs noted several of the tote bins had free fluid in them. Also noted were rust stains on the ground in the surrounding area.	Rainwater apparently accumulated in the tote pans which overflowed.	911 were called with a non-emergency spill cleanup request. Boeing Hazardous Waste Technicians responded and cleaned up all liquid material for testing & disposal. Ph was 6-7. SGS & NASA EPB remediation group was notified of

						the ground staining and will address. It's believed the stains may me from previous collection of iron materials for recycling in this area.
14-Sep-05	Diesel/carbo n blow by	<1 gallon	M7-1362	Unburned diesel fuel oil was discharged with the exhaust gas from the muffler of a diesel engine. The engine was being run in a no-load configuration which caused the problem.	Running the diesel engine in a no-load configuration due to water pipe breakage. The engine was run in support of SCAPE Operations.	Tarps were placed to protect the tanks and the surrounding ground. The grassy area where fuel oil contacted the ground was removed.
22-Sep-05	Coolant (glycol/water)	7 gallons	M7-360 Utility alley south side facility.	Mechanical failure on a JBOSC Recharger. Broken fan caused radiator damage which allowed coolant to leak to pavement.	Mechanical failure!	Initial response provided by Wyle driver operator, who placed absorbents on spill.
26-Sep-05	Automatic Transmission Fluid	0.75 gallon	Road near Pad B Guard Station.	Power steering line failed on contractor truck, approximately 0.75 gallons of automatic transmission fluid was released to asphalt.	Failure of a power steering line.	Oil dry and absorbent materials were used to contain and clean up the release of transmission fluid on the Pad B road near the guard shack.
27-Sep-05	Anhydrous Ammonia vapor	Less than 1 lb (vapor only)	M7-361A Vapor Containment Facility (VCF) (East of M7-360 SSPF)	During Ammonia Operations 9/27/05 second shift, a valve developed a small leak resulting in less than 1 pound of ammonia vapor being released and subsequently aspirated and vented from the VCF (M7-361A).	Mechanical failure of valve identified, isolated and has been contained, wrapped for the balance of the operation.	Valve was isolated, wrapped and is being monitored to contain any further vapor release. No cleanup needed - vapor only
27-Sep-05	Sodium Hydroxide	1/2 gallon	Facility 73720, FS-1 tanker maintenance garage.	Worker dropped a flange into waste solution splashing approximately 1/2 gallon on the floor of the facility. At the same time the material splashed in the eyes of the mechanic, who than reported to OHF for first aid.	Operator error!	FS-1 mechanics cleaned up the spill themselves. Waste managed in accordance with proper KSC protocol.
29-Sep-05	Hydraulic Oil	1/2 gallon	Facility M7-360 (SSPF)	A JBOSC Operated man lift experienced a hydraulic leak which spilled a small amount of oil on plywood under the tractor.	Equipment failure!	Initial response SGS Fire SVC in the form of absorbent material...Follow on cleanup by JBOSC PESCT.
3-Oct-05	Antifreeze (Ethylene Glycol)	<1 gallon	K6-1847 parking lot	POV boiled over as employee arrived at work.	Over heated engine.	SGS spill team applied absorbent material to contain and clean spill.
13-Oct-05	Hydraulic Oil	< 0.5 gal	Pad A surface on the SW side.	Hose on a hydraulic line developed a leak on a rental basket-type man lift.	Failure of a hydraulic line.	Workers used oil dry and laundered wipers to clean the surface.

21-Oct-05	R-12 Freon	13.5 oz of R-12 Freon (total unit load)	M7-505 room 1130, Flight Material Storage Refrigerator	While installing a temperature sensor in an empty Flight Material Storage Refrigerator, a refrigeration line was inadvertently nicked releasing by a drill, releasing all 13.5 oz of Freon r-12 in the unit.	Human error - drilled too close to the refrigeration line	None- N/A - Unit will be repaired, refilled and returned to service
30-Oct-05	Hydraulic oil	.25 gallon	Paved road in front of CIF Bldg. M6-342 @ KSC	A JBOSC Operated front end loader experienced a small leak at a hose fitting that leaked hydraulic oil on the grass and paved road.	Equipment failure.	Initial response by the tractor operators (Yang) in the form of absorbent pads and a bucket. Follow on cleanup provided by JBOSC PESCT.
11-Nov-05	Diesel	1 pint	Midfield Parasite	Diesel fueling hose not placed into secondary containment after use, small amount of diesel dripped onto soil.	Operator error.	Approximately 4 gallons of soil were removed, containerized and taken to USA Mod. Management.
14-Nov-05	Spirit 126 (TSRS# 31179)	0.5 gal	ARF Pharmacy	A pump broke resulting in a spill of approximately 0.5 gal of Spirit 126 cleaner.	Broken pump.	Oil dry and laundered wipers were used to clean up the spill. Pump to be repaired.
25-Nov-05	Hydraulic Oil	1 gallon	Intersection of Schwartz Rd. and Static Test Rd.	An SGS Security patrol car crashed into the ditch spilling a small amount of oil on the grass when the car was towed. Although the spill occurred at the edge of a ditch no water was affected by this spill.	Vehicle accident!	JBOSC Post Emergency Spill Cleanup Team responded initially with pads, and as a follow on effort the area was scraped with a grade-all in accordance with routine ditch maintenance. Waste from the spill was bulked with like material for proper disposal.
9-Dec-05	Laboratory Grade Mercury T2035-1	<1 cc	Room 138 M6-0342 CIF Bldg.	A glass thermometer slid off an equipment shelf when another piece of equipment was removed. The thermometer was inside a storage/shipping tube but the mercury leaked onto the floor.	Human error.	Room 138 was evacuated and locked until emergency response arrived. SGS waste management personnel removed the mercury and determined it was not necessary to 'sniff' the area. The waste was sealed in a plastic bag for disposal at the lab waste site.
13-Dec-05	Gasoline	about 1 pint	M7-355 O&C EAST PARKING LOT	About 1 pint of gasoline leaked from a POV. SGS Fire Services & EMS were called & responded. Material was cleaned up by SGS.	POV fuel leak	Fire Services applied oil dry and SGS removed material for disposal

24-Dec-05	Freon 22	60 lbs. total (3 recharge s). Leak repaired 1/4/06	M7-1469 RTGF chiller	It was discovered that the chiller had a small refrigerant leak. Due to holiday work loads and the presence of RTG's in the facility, the system was recharged and left for repair upon return to work.	Upon further inspection on 1/3/06 the leak was located in the condenser tube.	A burn permit was secured and the system repaired and recharged 1/4/06. Over the course of 2 weeks approximately 60 lbs out of 72 lbs total system capacity was lost. An ESR for chiller unit replacement has been submitted for approval.
13-Jan-06	Diesel Oil	0.02 gal of fuel, 50 gals of waste soil generated.	HMF Pump Station	Mike Hobson witnessed contamination on ground while on an inspection with DEP personnel.	Diesel oil in exhaust sprays onto building surfaces and ground when the engines are operated in a "no-load" configuration. This is a recurring problem.	Soil removal by SGS. Fifty gallons of waste soil was drummed and taken to K7-114 for disposal.
16-Jan-06	Hydrocarbon (Hydraulic Fluid)	10 gallon	VAB , K6-848 - a mobile crane supporting the removal of roofing from the K&L roof at the SW corner of the VAB low bay	A hydraulic line on a mobile crane broke.	A worn hydraulic line broke.	The SGS duty office was informed and the SGS Fire Services initially responded and applied absorbent clay. SGS waste management used absorbent materials and shovels to remove the gross contamination from the pavement, dumpsters, and crane. The soil/grass area was excavated by hand and the contaminated material from the dumpsters was also removed for proper disposal. The contractor was requested to examine the crane and replace worn or deteriorated lines.
18-Jan-06	MEK (CAS-No.78-93-3)	Approximately 1 Gallon	North of VAB	Cart containing painting supplies tipped over causing a can of MEK to spill.	Human error	Spill kit was on hand and deployed immediately after the spill. The MEK was on asphalt and was sopped up and disposed of in the proper waste stream.
20-Jan-06	Oil stain testing positive for PCB	< 1 pint	CAB, 31st floor A Tower	Oil stain, possibly ballast residue, on floor. Date/time of release is unknown; no equipment capable of causing this release is present now.	Unknown	SGS to clean and paint over the stain.

31-Jan-06	Hydrocarbon (Hydraulic Fluid)	5 gallon	VAB , K6-848 - a mobile crane supporting the removal of roofing from the K&L roof at the SW corner of the VAB low bay	A hydraulic fitting on a mobile crane broke. Hydraulic fluid spilled underneath the crane onto the asphalt pavement.	A worn hydraulic fitting broke.	The SGS duty office was informed and SGS waste management used absorbent materials and shovels to remove the spilled fluid from the pavement and crane. The contractor was requested to examine the crane and replace worn or deteriorated lines. The crane rental mechanic replaced the broken ring.
6-Feb-06	Diesel Fuel	20 gal.	Facility M6-595E Above ground fuel tank with secondary containment.	During a fuel transfer from a portable fuel tank, a hose which had been run up to the inlet of the fixed tank, came loose and fell below into the secondary containment area. Initially reported as a 60 gallon spill, the actual amount was estimated to be more approximately, 20gallons.	Employee error!	JBOSC PESCT responded and with a waste tanker evacuated the spilled fuel, which will be recycled with like material. Additional cleanup effort was provided in the form of soap and water to decontaminate the sides of the tank, as well as the sealed cement deck of the secondary containment area.
8-Feb-06	Diesel Fuel	~1/2 gallon	SLF Equipment area	Apparently, a Boeing 25ton forklift (HE401248) had been fueled and staged in preparation for operations at the SLF. As ambient temperature increased, the fuel in the vehicle tank expanded and approximately 1/2 gallon of diesel fuel overflowed and leaked on the pavement.	Human error - overfilled the vehicle fuel tank. Transportation Personnel will be briefed on proper fueling techniques to prevent reoccurrence. Mishap reporting requirements will also be reviewed to insure SHEA is notified at the time of occurrence.	SGS Safety Manager (Lee Hubbard) on site called SGS Spill Team for waste cleanup. SGS Spill Team personnel applied oil dry and disposed of waste.
14-Feb-06	Glycol	1 GALLON	POV accident 405 Causeway west of Indian River bridge	Car accident	Car accident	Cleaned up with absorbent. Accumulated 5 gallons of solid debris

7-Mar-06	Fuel, diesel	<2 gal	M6-486	A JBOSC Operated vacuum truck leaked a small amount of diesel fuel in several areas of roadway, this from a fuel tank lid that was not secured properly.	Operator Error! The small chain which holds the fuel cap on was inadvertently screwed into the filler spout, which allowed a small amount of fuel to slosh out of the tank when the vehicle stopped, or turned sharply.	Operators of the equipment soaked a small amount of spilled fuel from a puddle at M6-486, with a spill kit that was kept on-board the vacuum truck. Other small areas of spill soaked into the pavement and could not or would not be practical to absorb.
8-Mar-06	Hydraulic Fluid	approx. 1 gallon	Parking lot entrance from the road at Mate/Demate Device, SLF	SGS was using a USA 300 ton mobile crane and while driving to the work site a steering line ruptured, leaking hydraulic fluid onto asphalt.	Failure of hydraulic line.	SGS spill team was called and responded to clean up the spill with absorbent material.
15-Mar-06	Diesel Fuel	2-3 gallons	SLF by Mate/Demate device.	Sight glass for the fuel system on a 120 JLG Aerial Platform HE907-411 broke, allowing diesel fuel to run onto the asphalt with some reaching bare ground.	Equipment failure.	Spill Team was called.
16-Mar-06	Elemental Mercury	<100 mg	SLF, Mate Demate device	Some of the mercury in a leveling switch on the mate/demate access platform (south side) was spilled inside the electrical box. The box had a hole blown in it from sandblasting operations that took place about 3 years ago. There was blast media inside the box and the glass vial containing the mercury was broken. Some of the mercury was spilled inside the box on top of the blast media.	Possibly broken during sandblasting.	Alan Watson SGS cleaned up the spill.
17-Mar-06	Oily fluid	<1 pint	South parking lot of OSB II	Walking to my vehicle I noticed an oil spot beside and under a POV. It was oily water - probably coolant.	POV leak.	Called the SGS spill team and security. The vehicle owner was called but the leak was not from his vehicle. SGS cleaned the spill.
26-Mar-06	Hydraulic oil	~ 1 Gallon	VAB recycling bins near SW corner	A hydraulic bender to be excessed was left at the recycling bin area at the VAB without being drained and cleaned.	Unknown	SGS spill team responded and used absorbent clay to extract the spilled oil. USA Env Mgmt will provide guidance by bulletin for excessing materials and a sign will be placed at the VAB recycling area with contact information.



28-Mar-06	Diesel Fuel	<1/2 gallon	West end of SSPF (M7-360) outside loading dock gate	Apparently, the fuel cap on a Boeing flatbed truck, newly returned from fuel tank replacement and recently filled, vibrated loose allowing the contained fuel to slosh out during backing.	Suspected defective fuel cap seal. Vehicle being returned to vendor for replacement.	CMT Transportation people in truck applied absorbent pad from on-board spill kit. Non-emergency 911 calls initiated. JBOSC Fire Services applied oil dry to affected area. Boeing Hazardous Waste Technician clean up and disposed of waste.
3-Apr-06	Transmission Oil	< 1 gallon	Contractor Road across from K6-1896	Transmission filter on "Shuttle Wagon" seal failed, discharging transmission oil onto asphalt.	Transmission fluid filter failure.	Oil absorbing mats were used to contain the spill.
6-Apr-06	Hydraulic Oil	10 gal.	Highway 402 near the nature trail and in the parking lot at said trail.	A JBOSC operated dump truck experienced a hydraulic failure and spilled approximately ten gallons of oil on the highway and marl type parking lot.	Equipment damage!	JBOSC PESCT responded and with absorbents and shovels was able to remove the gross contamination.
10-Apr-06	Diesel Fuel	10 gal.	Ransom Rd west reutilization yard. (mid- field)	A metal compactor operated by Davis Salvage Co. experienced a leak from the sight glass on the side of a 40 gallon tank.	Equipment damage!	Initial response by the JBOSC PESCT with absorbents and shovels. At this time they were able to remove the gross contamination. Follow on cleanup provided on 4/13/06 when the machine was removed by the owner. JBOSC PESCT excavated approximately 30 cu. yd. sand/rock/clay base from the footprint of the spill. Follow on sampling confirmed the remaining site to be cleaned to 1 ppm on TVA meter.
11-Apr-06	Hydraulic oil	1 quart	LETF yard, North East of the M7-505A pump house	Broken hydraulic line on 30K forklift caused the oil to spray	Failure of 30K forklift fork positioning hydraulic cylinder	Used oil dry and absorbent pads to clean up the spill
13-Apr-06	Power Steering Fluid	2 1/2 Gallons	MILA S-Band Parking Lot (North End)	Forklift power steering fluid hose clamp failed and caused the return hose to come off.	Failed hose clamp.	Absorbent was applied to the area and brushed into the spill. The resulting solid waste was collected and placed in a UN approved hazardous waste drum to be shipped out for disposal as a controlled waste.

1-May-06	Diesel Fuel	2 gal.	Shuttle Complex 39A Perimeter rd inside pad.	A JBOSC Operated Shuttle Bus experienced a fuel leak associated with the mechanical workings. A dripping type leak ensued and Areas of contamination measured approximately 3'x9' in 5 separate areas.	Equipment failure.	The JBOSC Post Emergency Spill Cleanup Team applied absorbent clay on the contaminated areas, and disposed of the resultant waste properly.
1-May-06	Diesel Fuel	.25 gal.	M6-791 East Parking Lot.	A JBOSC Operated Shuttle Bus experienced a fuel leak associated with the tank mechanical workings. A dripping type leak ensued and when the bus stopped at the entrance to the building. A small amount of fuel puddle in a footprint measuring approximately 3'x6.	Equipment failure.	Spill was contained on pavement. Note: Questions regarding the bus should be directed to CMT Supervisor Art Wood at 867-7685.
8-May-06	Hydraulic Fluid	< 3 gallons	Asphalt, north of VAB	Line ruptured on 250 ton mobile crane, spilling hydraulic oil onto equipment with some reaching the paved surface.	Line failure	USA personnel deployed spill equipment to contain and clean the fluid.
11-May-06	Engine Coolant (glycol/water mix)	<1/2 gallon	South side of 1.2 MW emergency generator located on the southwest corner of SSPF (M7-360)	Upon approaching to the 1.2 MW emergency generator to do weekly maintenance, a Sverdrup Technician noticed seepage along the outer wall and a small wet spot on the concrete pad. Upon investigation it was noted that the generator coolant pump was dripping. Spill reporting was initiated.	Generator coolant pump failure	Boeing / Sverdrup technicians applied oil dry absorbent to affected area. Sverdrup personnel are repairing/replacing pump. Boeing Hazardous Waste Technicians will clean up and dispose of wastewater repairs are complete to insure capturing all seepage.
13-May-06	Hydraulic Oil	5 gallons.	M6-486 Southern parking area. Out back where they store the large cranes.	A JBOSC operated heavy crane leaked oil while being serviced.	Equipment damage!	Initial response by JBOSC Fire Services follows on cleanup by JBOSCPESCT. Utilized absorbent media to contain spill. Waste bulked with like material for proper disposal.
19-May-06	Engine Oil from POV	<1 pint	OSB 2 NE parking lot	POV (Blue Amigo) leaking engine oil onto asphalt.	POV Engine oil leak	Called spill team, contacted owner.
9-Jun-06	Diesel Fuel	5 gal.	Facility K6-947 Utility Annex (secondary containment to tanks)	Following a refueling operation of an SGS operated mobile fuel tanker, the transfer hose was incorrectly returned to its fixture, which caused a constant leak into the secondary containment area, until noticed a short while later.	Operator error!	The spill which was no more than 5 gallons was completely contained in the containment area. JBOSC PESCT responded and pumped out the residual fuel, as well as a complete wipe down of the affected area.

16-Jun-06	Motor oil from POV	1 Gallon	Hangar S parking lot.	Oil leaked from a container in an employees' personal vehicle to the asphalt	Unknown POV	Absorbent material (kitty litter) was applied and containerized for proper disposal.
19-Jun-06	Transformer Oil	Unknown	K7-1005	Abandoned transformer is leaking from the bottom. Leak has been taking place for an unknown period of time.	Corrosion of transformer has caused the lower end of it to leak onto grass below.	SGS was called to remediate the soil; they put plastic sheeting down to prevent further release to the environment until the transformer can be removed.
27-Jun-06	Electrolyte/Sulfuric Acid (10-30% v/v) CAS 7664-93-9	Approx. 1 Gallon	LCC Battery Tunnel/Vault	Leakage from a UPS Battery located on battery rack.	Faulty Battery	Spilled acid was neutralized and cleaned up using Acid Spill containment kit and absorbent pillows.
10-Jul-06	Hydraulic Fluid	~ 1 pint	Southeast corner of VAB	Fluid was sprayed against the VAB and onto concrete and asphalt due to equipment failure.	O-ring failure on a FRACO mast climber.	MetCon personnel applied spill cleanup materials.
12-Jul-06	Anhydrous Ammonia	~33 pounds	VCF east side of SSPF (M7-360)	During scheduled testing of ammonia servicing equipment a small leak was found. The test was terminated and, in place of the planned venting of 25 pounds the affected equipment was off totally loaded of ammonia (~ 33 pounds).	System leak resulting in system offload.	After offload Boeing technicians secured the system. Repairs are underway and the system testing will resume next week.
12-Jul-06	Hydraulic Oil	5 Gallons	Facility K8-741 New construction of a camera site on the beach adjacent to CX-41.	A NASA Sub Contractor (RUSH) experienced a leak on a hydraulic line of a steam roller which spilled approximately 5 gallons oil on the lime rock base of a new road they were building.	Equipment failure!	At the direction of JBOSC PESCT lead Ed Coyle the contractor (RUSH) immediately utilized a front end loader to excavate the contaminated lime rock. Waste (approx 1 cu yd.) was transported to K7-114 and bulked with like material for proper disposal.
13-Jul-06	gasoline	< 1 pint	Temporary fueling area, South side of M6-486	While fueling a NASA equipment van at M6-486 temporary fueling area the pump dispenser handle apparently functioned differently than a standard dispenser causing ~ 1 pint of gas to be discharged to the personnel and ground before the technicians were ready to actually fuel the vehicle.	Different fueling sequence than normally used and human error.	Fueling system was immediately shut down and 911 called. SGS technicians cleaned up spilled material with oil dry.
27-Jul-06	Hydraulic oil	1/2 gallon	M6-1212 paved area.	A JBOSC operated Haskel type mobile compressor experienced a leak and sprayed 1/2 gallon oil on the surrounding pavement.	Failure of aged equipment.	Compressor operators applied absorbent materials and cleaned up the spill themselves. Waste disposed of properly with like material..

31-Jul-06	Detergent/water	5 gal.	K7-114 (Non-Regulated but Controlled Waste Storage Facility...Outside tarmac...Pavement!	While unloading a 55 gallon drum of detergent water from the truck the forklift operator inadvertently poked a fork into the bottom of the drum. Approximately 5 gallons of liquid spilled in and around the truck.	Operator error.	The operator of the forklift is also a member of the JBOSC Spill Cleanup Team, and so immediately proceeded to absorb the spilled material and then disposed of the material properly.
19-Aug-06	Engine coolant	1 gal	Parking, asphalt at J7-1339	A JBOSC operated personnel carrier (fire rescue vehicle), leaked a small amount of glycol on the pavement.	Equipment failure!	The JBOSC PESCT responded, containerized, and disposed of waste properly.
21-Aug-06	Radiator Coolant	1/2 gallon	Paved lot north side of K7-416	A JBOSC operated mobile power generator experienced a failure causing a small amount of engine coolant to run out onto the pavement.	Equipment failure!	The JBOSC Post Emergency Spill Cleanup Team responded and absorbed the puddle coolant. Waste from the spill bulked with like material and disposed of properly.
6-Sep-06	Battery Acid	One quart.	Intersection of Kennedy Parkway & Launcher Rd.	A JBOSC operated duty van (G42-39150) collided with a POV. A small amount of battery acid leaked from the POV and was contained on pavement by the SGS Fire Services.	Vehicle Accident!	JBOSC PESCT responded and neutralized the acid. Waste from the spill has been properly disposed of.
10-Sep-06	Fuel , Diesel	1 gal	North parking lot at K7-416	A JBOSC Operated Refueled overfilled a day tank associated with a mobile power generator, which caused approximately 1 gallon of fuel to spill on the pavement.	Operator error!	Initial response provided by refueled operator in the form of absorbent clay. Follow on cleanup provided by JBOSC PESCT who removed the contaminated absorbents and disposed of them properly.
11-Sep-06	Hydraulic oil	20 gallons	Behind (and east of) the DM Water treatment plant located at K6-1697.	A JBOSC operated Mobile Compressor experienced a hydraulic component leak which allowed approximately 20 gallons of oil to leak onto the pavement.	Equipment Failure!	Initial response provided by SGS Wyle compressor operators in the form of absorbent pads, socks and clay. The JBOSC PESCT provided follow on cleanup by removing the standing oil and contaminated absorbents, and disposing of them properly.

11-Sep-06	Electrical transformer cooling oil, Non-PCB	8 ounces	K6-1249 OSB II Transformer pad Southwest corner of building.	A JBOSC operated electrical transformer experienced a leak which allowed approximately 8 ounces of non-PCB oil to drain onto the grass.	Equipment Failure! (Leaky weld seam)	Initial response provided by SGS High Voltage Group in the form of absorbent pads. The transformer has been drained to a level below the leak. The JBOSC PESCT provided follow on cleanup by excavating a small amount of contaminated sand, and then applying absorbent pads around the transformer. Follow on sampling of the soil has been requested and will take place when the transformer has been repaired or replaced.
14-Sep-06	Hydraulic oil	less than 1 gallon	North side of NASA CSWY 1/8 mile East of Static Test Rd on grass.	A JBOSC operated land clearing tractor experienced a hydraulic component leak which allowed approximately 1 gallon of oil to leak onto the grass.	Equipment Failure!	Initial response provided by SGS Yang operators in the form of absorbent pads, socks and a drip pan. The JBOSC PESCT provided follow on cleanup by removing two 55 gallon drums of the slightly contaminated grass, as well as the previously applied absorbents. Waste from the cleanup has been disposed of properly.
29-Sep-06	Engine Coolant	2 gallons	M6-1625 North fence line paved area.	A JBOSC Operated mobile air compressor experienced a mechanical type leak and spilled approximately two gallons coolant on the pavement.	Mechanical failure. A flex line parted.	Initial responded by the machine operators followed by the JBOSC PESCT who containerized the waste and disposed of it properly.
13-Oct-06	Hydraulic Oil	< 3 gallons (per SGS)	East end of O&C(M7-355) cul-de-sac	While delivering material for an SGS construction job at the O&C cul-de-sac, a Rinker materials truck blew a hydraulic oil hose. The contractor shut down the equipment, spread sand over the spilled material and contacted Fire Services for a non-emergency cleanup.	Mechanical failure of Rinker truck hydraulic hose.	Contractor and Fire Services laid absorbent materials to prevent runoff. SGS Waste technicians cleaned up spilled material with absorbents and oil dry. No material entered the storm drain. All waste materials were taken by SGS for proper disposal.

19-Oct-06	Hydraulic Oil	1 gal	East Crawlerway at VAB. Outside the perimeter fence gate.	An SGS subcontractor tractor trailer experienced a small hydraulic oil leak on the crawlerway.	Equipment failure!	JBOSC PESCT responded and excavated the contaminated rocks and disposed of them properly.
19-Oct-06	Hydraulic oil	2 gallons	Margo Site (east of the LES Shop). Very back of the antenna yard.	A JBOSC Operated Grade-All experienced a hydraulic oil line failure causing a small amount of oil to leak onto the moral/ lime rock antenna footer.	Equipment failure!	Initial response provided by the Grad-All operator in the form of absorbent pads from an onboard spill kit. Follow cleanup provided by the JBOSC PESCT who excavated the small areas of contamination to a visually clean level.
20-Oct-06	Diesel Fuel	0.5	M6-744 SGS Logistics facility pavement west of loading dock.	A JBOSC operated tractor trailer experienced a small fuel leak on the pavement.	Equipment failure.	JBOSC PESCT containerized the absorbents and disposed of them properly.
24-Dec-06	Diesel Fuel	1 gal.	M5-1494 pavement under a mobile electrical generator.	Recently fueled tank overflowed a small amount of fuel onto the pavement.	Overfill!	Initial response by the refueled in the form of absorbent materials...JBOSC Post Emergency Spill Cleanup Team followed up with detailed cleanup and proper disposal.

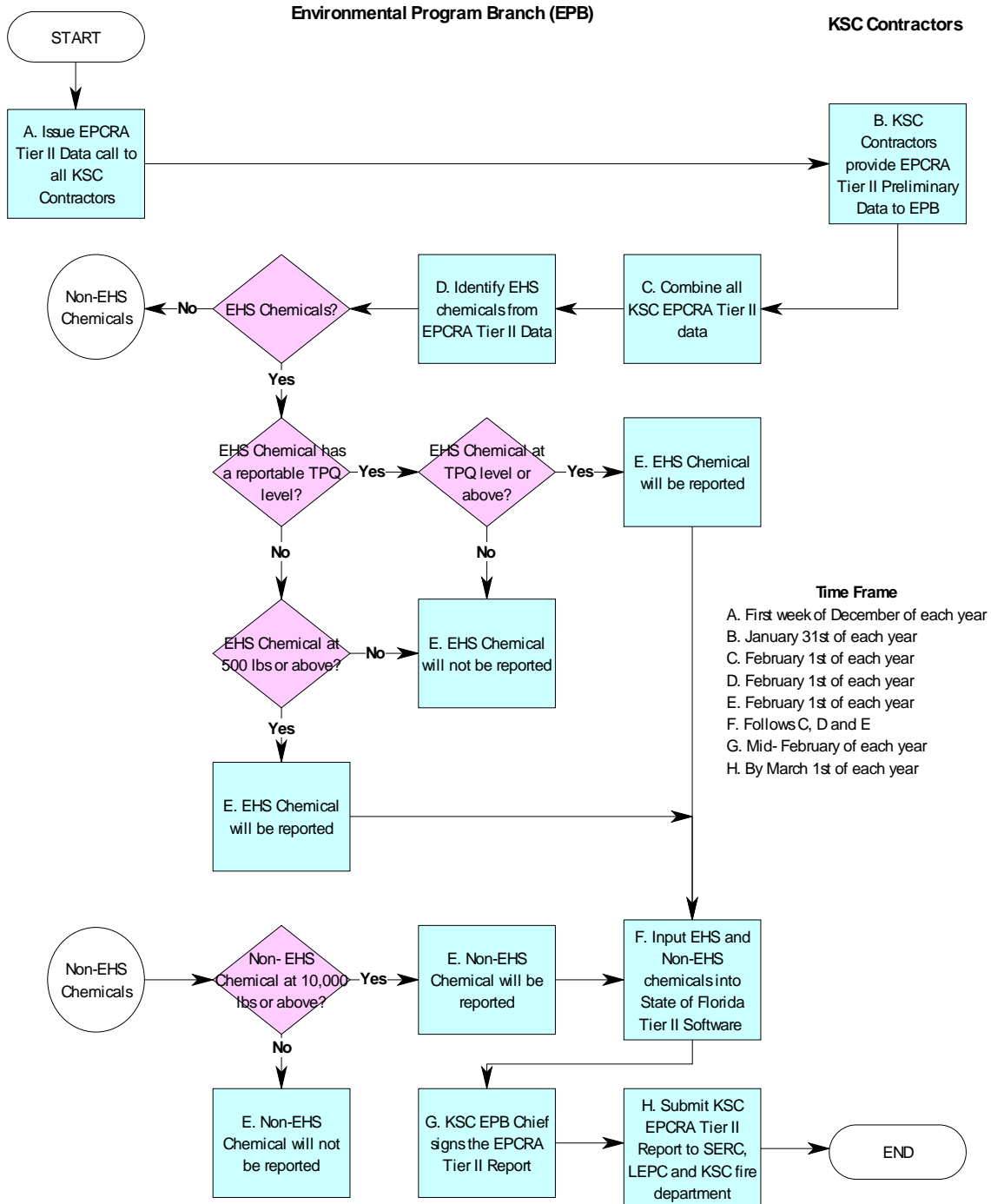
## Appendix B - KSC EPCRA Tier II Reporting Process

### Environmental Program Branch - KSC EPCRA Tier II Reporting Process to the State Emergency Response Commission (SERC), the Local Emergency Planning Committee (LEPC), and the Local Fire Department

Objective:

- To submit the KSC annual EPCRA Tier II data to the SERC, the LEPC, and fire department by March 1st of each year.

Approval: \_\_\_\_\_  
Chief, Safety, Health and Environmental Division



## Appendix C - KSC EPCRA Toxic Releasing Inventory (TRI) Process

### Environmental Program Branch - KSC EPCRA Toxic Release Inventory Reporting (TRI) Process to the US Environmental Protection Agency (EPA) and the State Emergency Response Commission (SERC)

Objective:

- To submit the KSC annual EPCRA TRI data to the US EPA and the SERC by July 1st of each year.

Approval:

Chief, Safety, Health and Environmental Division

